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LITERATURE SURVEY OF RADIOCHEMICAL CROSS-SECTION DATA BELOW 425 MeV

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OAK RIDGE NATIONAL LABORATORY
operated by
UNION CARBIDE CORPORATION
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Neutron Physics Division

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by

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OAK RIDGE NATIONAL LABORATORY
Oak Ridge, Tennessee
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ABSTRACT

The results of a literature survey that was made of radiochemical cross sections below 425 MeV are given in tabular form. The cross-section data are tabulated for reactions involving incident protons, neutrons, and π mesons in the energy range from about 20 to 400 MeV interacting with nuclei ranging from lithium to the heaviest weight elements.

The results of a literature search for the experimental reaction cross sections usually measured by radiochemical techniques are presented in this report. Cross sections are tabulated for reactions involving incident protons, neutrons, and π mesons in the energy range from about 20 to 400 MeV interacting with nuclei ranging from lithium to the heaviest weight elements.

The earliest data included here are those tabulated in a comprehensive survey made by Bruninx[8,29*] for reactions below about 400 MeV, and the latest data include those published before July 1965 in the Physical Review or in articles abstracted in the May 1965 issue of Science Abstracts, Physics.

The experimental data were taken from tables and graphs in the references cited, with no attempt being made to evaluate the experiments. The errors listed are the published errors, and may reflect statistical errors or systematic errors or both. In a few cases the same data are tabulated under two different references: the original publication and another publication which cited the original material. We made no attempt to eliminate this overlap.

The bulk of the data that are tabulated pertain to reactions involving incident protons; the remaining few cases consist of neutron data and pion data. For each type of incident particle the data are listed according to increasing target mass number, and for each target the data are tabulated according to decreasing atomic number of the residual nucleus, decreasing mass number of the residual nucleus, and increasing incident-particle energy.

Target and residual nuclei are listed with the element symbol followed by the mass and atomic numbers in parentheses.

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*See list of references preceding tables.

Omission of the mass number in the target nucleus reflects a similar omission in the published data, and we assumed that the element used in the experiment was in its naturally occurring state. In the combinations of isotopes in the residual nucleus for which the mass number was also omitted, the combinations are as follows: $^{34+38}_{17}Cl$, $^{43+44}_{21}Sc$, $^{81+82}_{37}Rb$, $^{83+84}_{39}Y$, $^{116+117}_{52}Te$, $^{120+121}_{53}I$, $^{171+172}_{71}Lu$, $^{176+180}_{73}Ta$, $^{191+193m}_{78}Pt$, $^{198+199}_{79}Au$, and $^{192+193+194}_{81}Tl$. Parentheses around a cross-section value indicate that the actual value of the cross section is less than that number. The designation E-2 or E-3 following a set of parentheses indicates that the value within the parentheses should be multiplied by 10^{-2} or 10^{-3}.

This literature search is a direct outgrowth of our attempts to evaluate the accuracy of our cascade-evaporation model[54] in predicting radiochemical cross sections. A report on the evaluation is in progress.[55]

REFERENCES

1. L. Valentin et al., Phys. Letters 17, 163 (1963).
2. L. Valentin, Nucl. Phys. 62, 81 (1965).
3. V. Parikh, Nucl. Phys. 18, 646 (1960).
4. L. Valentin et al., J. Phys. 25, 704 (1964).
5. G. Albouy et al., J. Phys. Radium 23, 1000 (1962).
6. J. B. Cumming, Nucl. Phys. 49, 417 (1963).
7. C. M. Brun, M. Lefort, and X. Tarrago, J. Phys. Radium 23, 167 (1962).
8. E. Bruninx, High-Energy Nuclear Reaction Cross-Sections, CERN-61-1 (Jan. 16, 1961).
9. T. M. Kavanagh, J. K. P. Lee, and W. T. Link, Can. J. Phys. 42, 1429 (1964).
10. V. Parikh, Nucl. Phys. 18, 638 (1960).
11. V. Parikh, Nucl. Phys. 18, 628 (1960).
12. M. Honda and D. Lal, Nucl. Phys. 51, 363 (1964).
13. G. V. S. Rayudu, Can. J. Chem. 42, 1149 (1964).
14. M. Honda and D. Lal, Phys. Rev. 118, 1618 (1960).
15. G. Albouy et al., Phys. Letters 2, 306 (1962).
16. E. Gradsztajn, J. Phys. Radium 21, 761 (1960).
17. R. Klapisch et al., J. Phys. 24, 839 (1963).
18. M. Gusakow, Ann. Phys. (Paris) 7, 67 (1962).
19. I. Levenberg, V. Pokrovsky, and I. Yutlandov, Nucl. Phys. 41, 504 (1963).
20. M. Ya. Kuznetsova, V. N. Pokrovskii, and V. N. Rybakov, Soviet Phys. JETP (English Transl.) 15, 1006 (1962).
21. I. Levenberg et al., Nucl. Phys. 51, 673 (1964).
22. M. Nguyen-Long-Den and M. Borot, Phys. Letters 5, 92 (1963).
23. M. Nguyen-Long-Den, Compt. Rend. 253, 2919 (1961).
24. J. B. Cumming et al., Phys. Rev. 128, 2392 (1962).
25. D. L. Morrison and A. A. Caretto, Jr., Phys. Rev. 127, 1731 (1962).
26. L. P. Remsberg and J. M. Miller, Phys. Rev. 130, 2069 (1963).
27. G. Rudstam, E. Bruninx, and A. C. Pappas, Phys. Rev. 126, 1852 (1962).
28. H. P. Yule and A. Turkevich, Phys. Rev. 118, 1591 (1960).
29. E. Bruninx, High-Energy Nuclear Reaction Cross-Sections. II, CERN-62-9 (Feb. 15, 1962).

30. D. L. Morrison and A. A. Caretto, Jr., Phys. Rev. 133, B1165 (1964).

31. N. T. Porile et al., Nucl. Phys. 43, 500 (1963).

32. E. Unseren and E. O. Wiig, Phys. Rev. 122, 1875 (1961).

33. R. G. Korteling and E. K. Hyde, Phys. Rev. 136, B425 (1964).

34. G. Albouy et al., J. Phys. 24, 67 (1963).

35. J. Muto et al., Nucl. Phys. 47, 19 (1963).

36. V. N. Rybakov and N. S. Mal'tseva, Soviet Phys. JETP (English Transl.) 19, 1287 (1964).

37. D. W. Maurer and E. O. Wiig, J. Am. Chem. Soc. 84, 4059 (1962).

38. C. Riehl, J. Phys. Radium 22, 770 (1961).

39. W. R. Ware and E. O. Wiig, Phys. Rev. 122, 1837 (1961).

40. B. M. Foreman, Jr., Phys. Rev. 132, 1768 (1963).

41. S. Meloni and J. B. Cumming, Phys. Rev. 136, B1359 (1964).

42. G. V. S. Rayudu and L. Yaffe, Can. J. Chem. 41, 2544 (1963).

43. C. L. Rao and L. Yaffe, Can. J. Chem. 41, 2516 (1963).

44. G. R. Grant and L. Yaffe, Can. J. Chem. 41, 2533 (1963).

45. R. S. Tilbury and L. Yaffe, Can. J. Chem. 41, 2634 (1963).

46. N. Poffé et al., J. Phys. Radium 22, 639 (1961).

47. T. M. Kavanagh and R. E. Bell, Can. J. Phys. 39, 1172 (1961).

48. B. N. Belyaev, A. V. Kalyamin, and A. N. Murin, Soviet Phys. "Doklady" (English Transl.) 6, 784 (1962).

49. H. Gauvin, J. Phys. 24, 836 (1963).

50. X. Tarrago, J. Phys. Radium 23, 1 (1962).

51. M. Lefort, Compt. Rend. 253, 2221 (1961).

52. I. Heertzj, L. Delvenne, and A. H. W. Aten, Jr., Physica 30, 1609 (1964).

53. P. L. Reeder and S. S. Markowitz, Phys. Rev. 133, B639 (1964).

54. H. W. Bertini, Phys. Rev. 131, 1801 (1963) and 138, AB2 (1965).

55. H. W. Bertini, Calculated Radiochemical Cross Sections and the Effects of a Few Nuclear Parameters for Incident Protons and π^- Mesons in the 200-MeV Energy Region, ORNL-TM-1562 (to be published).

INC. PART	TARGET NUCLEUS	RESIDUAL NUCLEUS	ENERGY (MEV)	SIGMA (MB) EXPERIMENT	REF
P	LI(7, 3)	BE(7, 4)	155.0	3.5 + 0.2	1
P	LI(7, 3)	BE(7, 4)	155.0	3.8 + 0.2	2
P	BE(9, 4)	BE(7, 4)	155.0	8.8 + 0.5	1
P	BE(9, 4)	BE(7, 4)	352.0	12.0 + 0.48	3
P	B(10, 5)	C(10, 6)	155.0	.65 + 0.1	1
P	B(10, 5)	BE(7, 4)	50.0	13.0	4
P	B(10, 5)	BE(7, 4)	100.0	11.5	4
P	B(10, 5)	BE(7, 4)	150.0	8.0	4
P	B(10, 5)	BE(7, 4)	155.0	7.5 + 0.5	1
P	B(11, 5)	C(11, 6)	40.0	31.0 + 2.0	2
P	B(11, 5)	C(11, 6)	53.0	24.0 + 3.0	5
P	B(11, 5)	C(11, 6)	90.0	7.9 + 0.2	2
P	B(11, 5)	C(11, 6)	103.0	9.0 + 2.0	5
P	B(11, 5)	C(11, 6)	153.0	5.0 + 1.0	5
P	B(11, 5)	C(11, 6)	155.0	3.5 + 0.2	1
P	B(11, 5)	C(10, 6)	155.0	.55 + 0.1	1
P	B(11, 5)	BE(7, 4)	50.0	15.0	4
P	B(11, 5)	BE(7, 4)	100.0	8.0	4
P	B(11, 5)	BE(7, 4)	150.0	7.0	4
P	B(11, 5)	BE(7, 4)	155.0	14.0 + 1.0	1
P	C(12, 6)	C(11, 6)	20.7	38.0 + 1.3	6
P	C(12, 6)	C(11, 6)	21.1	32.9 + 1.1	6
P	C(12, 6)	C(11, 6)	30.1	89.1 + 3.0	6
P	C(12, 6)	C(11, 6)	33.3	92.5 + 3.1	6
P	C(12, 6)	C(11, 6)	37.7	90.0 + 3.0	6
P	C(12, 6)	C(11, 6)	42.0	89.4 + 3.0	6
P	C(12, 6)	C(11, 6)	42.8	91.0 + 3.0	6
P	C(12, 6)	C(11, 6)	44.2	88.8 + 3.0	6
P	C(12, 6)	C(11, 6)	50.0	80.0 + 5.0	4
P	C(12, 6)	C(11, 6)	50.5	86.4 + 2.6	6
P	C(12, 6)	C(11, 6)	80.0	70.0	7
P	C(12, 6)	C(11, 6)	90.0	66.0	7
P	C(12, 6)	C(11, 6)	93.0	70.5 + 3.6	8
P	C(12, 6)	C(11, 6)	98.1	63.3 + 0.3	9
P	C(12, 6)	C(11, 6)	100.0	61.0	7
P	C(12, 6)	C(11, 6)	100.0	62.0	4
P	C(12, 6)	C(11, 6)	120.0	53.0	7
P	C(12, 6)	C(11, 6)	144.0	56.5 + 1.5	8
P	C(12, 6)	C(11, 6)	150.0	45.0	7
P	C(12, 6)	C(11, 6)	150.0	43.0	4
P	C(12, 6)	C(11, 6)	150.0	46.2 + 1.4	8
P	C(12, 6)	C(11, 6)	155.0	42.0	1
P	C(12, 6)	C(11, 6)	170.0	39.7 + 0.9	8
P	C(12, 6)	C(11, 6)	194.0	52.0 + 1.5	8
P	C(12, 6)	C(11, 6)	202.0	38.3	10
P	C(12, 6)	C(11, 6)	204.0	37.0 + 2.0	8
P	C(12, 6)	C(11, 6)	238.0	35.8 + 2.4	8
P	C(12, 6)	C(11, 6)	240.0	37.2 + 1.8	8
P	C(12, 6)	C(11, 6)	245.0	49.8 + 1.2	8
P	C(12, 6)	C(11, 6)	252.0	36.3	10
P	C(12, 6)	C(11, 6)	259.0	36.3	10
P	C(12, 6)	C(11, 6)	260.0	38.2 + 0.5	8
P	C(12, 6)	C(11, 6)	263.0	50.5 + 2.6	8
P	C(12, 6)	C(11, 6)	270.0	35.9 + 1.0	8
P	C(12, 6)	C(11, 6)	288.0	33.7 + 1.2	11

INC. PART	TARGET NUCLEUS	RESIDUAL NUCLEUS	ENERGY (MEV)	SIGMA (MB) EXPERIMENT	REF
P	C(12, 6)	C(11, 6)	290.0	36.9 + 0.9	8
P	C(12, 6)	C(11, 6)	293.0	47.7 + 1.0	8
P	C(12, 6)	C(11, 6)	294.0	35.5	10
P	C(12, 6)	C(11, 6)	295.0	37.9 + 0.4	8
P	C(12, 6)	C(11, 6)	295.0	35.5 + 1.0	8
P	C(12, 6)	C(11, 6)	302.0	34.7	10
P	C(12, 6)	C(11, 6)	310.0	31.9 + 2.4	8
P	C(12, 6)	C(11, 6)	313.0	47.6 + 2.1	8
P	C(12, 6)	C(11, 6)	313.0	34.8 + 1.0	11
P	C(12, 6)	C(11, 6)	320.0	35.5 + 0.7	8
P	C(12, 6)	C(11, 6)	325.0	35.9 + 0.8	8
P	C(12, 6)	C(11, 6)	339.0	34.9 + 1.0	11
P	C(12, 6)	C(11, 6)	340.0	41.2 + 0.6	8
P	C(12, 6)	C(11, 6)	342.0	35.0	10
P	C(12, 6)	C(11, 6)	342.0	32.5	10
P	C(12, 6)	C(11, 6)	350.0	36.0 + 0.7	8
P	C(12, 6)	C(11, 6)	350.0	36.0 + 0.7	8
P	C(12, 6)	C(11, 6)	352.0	33.1	10
P	C(12, 6)	C(11, 6)	362.0	32.4 + 1.0	11
P	C(12, 6)	C(11, 6)	365.0	37.4 + 3.1	8
P	C(12, 6)	C(11, 6)	383.0	31.6 + 1.01	3
P	C(12, 6)	C(11, 6)	420.0	31.2 + 2.8	8
P	C(12, 6)	C(10, 6)	155.0	2.6 + 0.3	1
P	C(12, 6)	C(10, 6)	365.0	3.55	8
P	C(12, 6)	C(10, 6)	420.0	3.30	8
P	C(12, 6)	BE(10, 4)	220.0	1.8 + 0.6	12
P	C(12, 6)	BE(7, 4)	80.0	17.5	7
P	C(12, 6)	BE(7, 4)	90.0	16.0	7
P	C(12, 6)	BE(7, 4)	100.0	15.0	7
P	C(12, 6)	BE(7, 4)	120.0	13.0	7
P	C(12, 6)	BE(7, 4)	130.0	8.32 + 1.66	13
P	C(12, 6)	BE(7, 4)	150.0	10.5	7
P	C(12, 6)	BE(7, 4)	155.0	11.0	1
P	C(12, 6)	BE(7, 4)	208.0	6.8 + 1.05	13
P	C(12, 6)	BE(7, 4)	225.0	8.2 + 0.6	14
P	C(12, 6)	BE(7, 4)	297.0	8.50 + 1.30	13
P	C(12, 6)	BE(7, 4)	300.0	10.3 + 0.7	14
P	C(12, 6)	BE(7, 4)	352.0	8.3	3
P	C(12, 6)	BE(7, 4)	396.0	7.05 + 1.08	13
P	C(12, 6)	BE(7, 4)	400.0	9.6 + 0.7	14
P	C(12, 6)	LI(8, 3)	340.0	0.70 + 0.20	8
P	C(12, 6)	H(3, 1)	225.0	7.0 + 1.1	14
P	C(12, 6)	H(3, 1)	300.0	7.0 + 0.8	14
P	C(12, 6)	H(3, 1)	400.0	8.6 + 1.0	14
P	C(13, 6)	N(13, 7)	155.0	1.9 + 0.2	2
P	N(14, 7)	O(14, 8)	155.0	0.075 + 0.01	1
P	N(14, 7)	N(13, 7)	25.0	40.0	2
P	N(14, 7)	N(13, 7)	50.0	22.0	4
P	N(14, 7)	N(13, 7)	100.0	12.0	4
P	N(14, 7)	N(13, 7)	150.0	8.0	4
P	N(14, 7)	N(13, 7)	155.0	8.3 + 0.5	1
P	N(14, 7)	N(13, 7)	400.0	5.6	8
P	N(14, 7)	N(13, 7)	420.0	11.0	8
P	N(14, 7)	C(11, 6)	25.0	43.0	4
P	N(14, 7)	C(11, 6)	50.0	18.5	4

INC. PART	TARGET NUCLEUS	RESIDUAL NUCLEUS	ENERGY (MEV)	SIGMA (MB) EXPERIMENT	REF
P	N(14, 7)	C(11, 6)	100.0	17.2	4
P	N(14, 7)	C(11, 6)	150.0	16.3	4
P	N(14, 7)	C(11, 6)	155.0	15 + 1.0	1
P	N(14, 7)	C(11, 6)	420.0	22.6	8
P	N(14, 7)	C(10, 6)	155.0	1.6 + 0.3	1
P	N(14, 7)	BE(7, 4)	155.0	6.5 + 1.0	1
P	N(14, 7)	LI(8, 3)	340.0	0.55 + 0.16	8
P	O(, 8)	O(15, 8)	420.0	30.7	8
P	O(, 8)	N(13, 7)	420.0	14.0 + 3.5	8
P	O(, 8)	N(13, 7)	420.0	6.5	8
P	O(, 8)	C(11, 6)	420.0	31.0 + 7.75	8
P	O(, 8)	C(11, 6)	420.0	8.4	8
P	O(, 8)	C(10, 6)	420.0	6.1	8
P	O(, 8)	BE(7, 4)	130.0	7.85 + 1.96	13
P	O(, 8)	BE(7, 4)	208.0	4.89 + 1.22	13
P	O(, 8)	BE(7, 4)	297.0	6.54 + 1.63	13
P	O(, 8)	BE(7, 4)	396.0	7.47 + 1.87	13
P	O(16, 8)	O(15, 8)	25.0	25.0	15
P	O(16, 8)	O(15, 8)	28.0	45.0	2
P	O(16, 8)	O(15, 8)	45.0	67.0 + 5.0	15
P	O(16, 8)	O(15, 8)	50.0	69.0	4
P	O(16, 8)	O(15, 8)	100.0	59.0	4
P	O(16, 8)	O(15, 8)	110.0	60.0 + 5.0	15
P	O(16, 8)	O(15, 8)	145.0	40.0 + 5.0	15
P	O(16, 8)	O(15, 8)	150.0	42.0	4
P	O(16, 8)	O(15, 8)	155.0	38.0 + 4.0	1
P	O(16, 8)	O(15, 8)	362.0	20.2 + 2.02	3
P	O(16, 8)	O(14, 8)	155.0	0.9 + 0.1	1
P	O(16, 8)	N(13, 7)	25.0	19.0	4
P	O(16, 8)	N(13, 7)	25.0	18.0	15
P	O(16, 8)	N(13, 7)	50.0	3.5	4
P	O(16, 8)	N(13, 7)	52.0	3.5	15
P	O(16, 8)	N(13, 7)	100.0	5.0	4
P	O(16, 8)	N(13, 7)	108.0	4.0	15
P	O(16, 8)	N(13, 7)	150.0	5.0	4
P	O(16, 8)	N(13, 7)	150.0	4.5	15
P	O(16, 8)	N(13, 7)	155.0	4.5 + 1.0	1
P	O(16, 8)	N(13, 7)	362.0	1.0 + 0.41	3
P	O(16, 8)	C(11, 6)	35.0	2.5 + 0.8	15
P	O(16, 8)	C(11, 6)	51.0	13.0 + 0.7	15
P	O(16, 8)	C(11, 6)	95.0	15.2 + 0.7	15
P	O(16, 8)	C(11, 6)	150.0	11.5 + 0.5	15
P	O(16, 8)	C(11, 6)	155.0	11.0 + 1.0	1
P	O(16, 8)	C(11, 6)	362.0	13.6 + 1.632	3
P	O(16, 8)	C(10, 6)	155.0	1.0 + 0.2	1
P	O(16, 8)	BE(7, 4)	52.0	2.0 + 0.5	15
P	O(16, 8)	BE(7, 4)	110.0	5.0 + 1.2	15
P	O(16, 8)	BE(7, 4)	150.0	3.8 + 1.0	15
P	O(16, 8)	BE(7, 4)	155.0	4.5 + 1.0	1
P	O(16, 8)	BE(7, 4)	155.0	5.0 + 1.5	16
P	O(16, 8)	LI(7, 3)	156.0	14.0	17
P	O(16, 8)	LI(6, 3)	155.0	12.0 + 4.0	16
P	O(16, 8)	LI(6, 3)	156.0	9.8 + 1.4	17
P	O(18, 8)	F(18, 9)	420.0	41.0 + 10.25	8
P	F(19, 9)	NE(19, 10)	155.0	4.0 + 2.0	1

INC. PART	TARGET NUCLEUS	RESIDUAL NUCLEUS	ENERGY (MEV)	SIGMA (MB) EXPERIMENT	REF
P	F(19, 9)	F(18, 9)	20.0	66.0 + 20.0	18
P	F(19, 9)	F(18, 9)	21.0	105.0 + 25.0	18
P	F(19, 9)	F(18, 9)	23.0	182.0 + 27.0	18
P	F(19, 9)	F(18, 9)	27.0	200.0 + 28.0	18
P	F(19, 9)	F(18, 9)	34.0	230.0 + 30.0	18
P	F(19, 9)	F(18, 9)	37.0	146.0 + 16.0	18
P	F(19, 9)	F(18, 9)	43.0	126.0 + 15.0	18
P	F(19, 9)	F(18, 9)	45.0	124.0 + 15.0	18
P	F(19, 9)	F(18, 9)	48.0	90.0 + 10.0	18
P	F(19, 9)	F(18, 9)	50.0	84.0 + 10.0	18
P	F(19, 9)	F(18, 9)	50.0	88.0	4
P	F(19, 9)	F(18, 9)	60.0	67.0 + 8.0	18
P	F(19, 9)	F(18, 9)	64.0	55.0 + 7.0	18
P	F(19, 9)	F(18, 9)	70.0	56.0 + 7.0	18
P	F(19, 9)	F(18, 9)	74.0	64.0 + 8.0	18
P	F(19, 9)	F(18, 9)	79.5	50.0 + 6.0	18
P	F(19, 9)	F(18, 9)	82.0	46.0 + 1.5	19
P	F(19, 9)	F(18, 9)	89.0	47.0 + 6.0	18
P	F(19, 9)	F(18, 9)	99.0	46.0 + 6.0	18
P	F(19, 9)	F(18, 9)	100.0	43.0	4
P	F(19, 9)	F(18, 9)	110.0	38.5 + 1.3	19
P	F(19, 9)	F(18, 9)	113.0	40.0 + 5.0	18
P	F(19, 9)	F(18, 9)	141.0	32.0 + 5.0	18
P	F(19, 9)	F(18, 9)	144.0	30.3 + 1.0	19
P	F(19, 9)	F(18, 9)	150.0	30.0	4
P	F(19, 9)	F(18, 9)	154.0	27.0 + 4.0	18
P	F(19, 9)	F(18, 9)	155.0	28.0 + 3.0	1
P	F(19, 9)	F(18, 9)	176.0	25.8 + 0.8	19
P	F(19, 9)	F(18, 9)	196.0	24.7 + 0.8	19
P	F(19, 9)	F(18, 9)	225.0	24.3 + 0.8	19
P	F(19, 9)	F(18, 9)	263.0	24.6 + 0.8	19
P	F(19, 9)	F(18, 9)	280.0	28.0	8
P	F(19, 9)	F(18, 9)	330.0	23.9 + 0.8	19
P	F(19, 9)	F(18, 9)	362.0	14.2 + 1.562	3
P	F(19, 9)	F(18, 9)	380.0	27.0	8
P	F(19, 9)	F(18, 9)	400.0	26.0	8
P	F(19, 9)	F(18, 9)	420.0	22.0 + 5.5	8
P	F(19, 9)	F(18, 9)	420.0	22.9	8
P	F(19, 9)	F(18, 9)	426.0	23.1 + 0.8	19
P	F(19, 9)	F(17, 9)	155.0	6.5 + 1.0	1
P	F(19, 9)	O(15, 8)	155.0	10.5 + 2.0	1
P	F(19, 9)	O(15, 8)	362.0	4.2 + 0.504	3
P	F(19, 9)	O(15, 8)	420.0	10.3	8
P	F(19, 9)	O(14, 8)	155.0	(0.05)	1
P	F(19, 9)	N(13, 7)	155.0	3.0 + 1.0	1
P	F(19, 9)	N(13, 7)	362.0	1.1 + .154	3
P	F(19, 9)	N(13, 7)	420.0	(0.65)	8
P	F(19, 9)	C(11, 6)	155.0	5.5 + 1.0	1
P	F(19, 9)	C(11, 6)	362.0	4.2 + .504	3
P	F(19, 9)	C(11, 6)	420.0	9.7	8
P	F(19, 9)	C(10, 6)	155.0	(0.1)	1
P	F(19, 9)	C(10, 6)	420.0	4.8	8
P	F(19, 9)	BE(7, 4)	155.0	4.0 + 1.0	1
P	NE(20, 10)	LI(8, 3)	340.0	0.20 + 0.06	8
P	NA(23, 11)	NA(22, 11)	15.0	72.0 +15.0	18

INC. PART	TARGET NUCLEUS	RESIDUAL NUCLEUS	ENERGY (MEV)	SIGMA (MB) EXPERIMENT	REF
P	NA(23, 11)	NA(22, 11)	20.0	113.0 + 12.0	18
P	NA(23, 11)	NA(22, 11)	32.0	115.0 + 12.0	18
P	NA(23, 11)	NA(22, 11)	45.0	112.0 + 12.0	18
P	NA(23, 11)	NA(22, 11)	51.5	94.0 + 10.0	18
P	NA(23, 11)	NA(22, 11)	56.5	90.0 + 9.0	18
P	NA(23, 11)	NA(22, 11)	66.5	90.0 + 9.0	18
P	NA(23, 11)	NA(22, 11)	77.0	67.0 + 7.0	18
P	NA(23, 11)	NA(22, 11)	80.0	80.0 + 8.0	18
P	NA(23, 11)	NA(22, 11)	88.0	64.0 + 7.0	18
P	NA(23, 11)	NA(22, 11)	103.0	65.0 + 7.0	18
P	NA(23, 11)	NA(22, 11)	110.0	63.7 + 7.0	18
P	NA(23, 11)	NA(22, 11)	117.0	44.0 + 5.0	18
P	NA(23, 11)	NA(22, 11)	134.0	47.5 + 5.0	18
P	NA(23, 11)	NA(22, 11)	152.0	47.0 + 5.0	18
P	NA(23, 11)	NA(22, 11)	155.0	45.0 + 5.0	2
P	MG(, 12)	NA(24, 11)	130.0	28.2 + 4.2	13
P	MG(, 12)	NA(24, 11)	208.0	25.2 + 3.76	13
P	MG(, 12)	NA(24, 11)	297.0	29.0 + 4.30	13
P	MG(, 12)	NA(24, 11)	396.0	30.5 + 4.55	13
P	MG(, 12)	NA(22, 11)	130.0	28.3 + 4.20	13
P	MG(, 12)	NA(22, 11)	208.0	21.6 + 3.22	13
P	MG(, 12)	NA(22, 11)	297.0	23.8 + 3.55	13
P	MG(, 12)	NA(22, 11)	396.0	22.2 + 3.31	13
P	MG(, 12)	BE(7, 4)	130.0	2.66 + 0.66	13
P	MG(, 12)	BE(7, 4)	208.0	2.31 + 0.58	13
P	MG(, 12)	BE(7, 4)	297.0	2.48 + 0.62	13
P	MG(, 12)	BE(7, 4)	396.0	3.25 + 0.88	13
P	MG(24, 12)	H(3, 1)	300.0	19.0 + 6.0	8
P	MG(25, 12)	NA(22, 11)	25.0	15.0	4
P	MG(25, 12)	NA(22, 11)	50.0	38.5	4
P	MG(25, 12)	NA(22, 11)	100.0	43.0	4
P	AL(27, 13)	MG(27, 12)	130.0	0.086 + 0.004	20
P	AL(27, 13)	MG(27, 12)	200.0	0.081 + .040	20
P	AL(27, 13)	MG(27, 12)	240.0	0.094 + .003	20
P	AL(27, 13)	MG(27, 12)	280.0	0.143 + 0.007	20
P	AL(27, 13)	MG(27, 12)	320.0	0.155 + .0012	20
P	AL(27, 13)	MG(27, 12)	380.0	0.164 +.016	20
P	AL(27, 13)	NA(24, 11)	37.4	0.8 + 0.2	6
P	AL(27, 13)	NA(24, 11)	44.1	2.8 + 0.2	6
P	AL(27, 13)	NA(24, 11)	50.0	1.52	8
P	AL(27, 13)	NA(24, 11)	50.1	6.1 + 0.2	6
P	AL(27, 13)	NA(24, 11)	50.6	6.5 + 0.2	6
P	AL(27, 13)	NA(24, 11)	60.0	5.4	8
P	AL(27, 13)	NA(24, 11)	70.0	8.2	8
P	AL(27, 13)	NA(24, 11)	80.0	10.3	7
P	AL(27, 13)	NA(24, 11)	80.0	10.4	8
P	AL(27, 13)	NA(24, 11)	82.0	11.7 + 0.4	19
P	AL(27, 13)	NA(24, 11)	90.0	10.7	8
P	AL(27, 13)	NA(24, 11)	100.0	10.8	7
P	AL(27, 13)	NA(24, 11)	110.0	10.9 + 0.4	19
P	AL(27, 13)	NA(24, 11)	110.0	10.6	8
P	AL(27, 13)	NA(24, 11)	120.0	10.1	7
P	AL(27, 13)	NA(24, 11)	120.0	10.2	21
P	AL(27, 13)	NA(24, 11)	125.0	10.2	8
P	AL(27, 13)	NA(24, 11)	134.0	10.9 + 0.4	19

INC. PART	TARGET NUCLEUS	RESIDUAL NUCLEUS	ENERGY (MEV)	SIGMA (MB) EXPERIMENT	REF
P	AL(27, 13)	NA(24, 11)	135.0	9.7	8
P	AL(27, 13)	NA(24, 11)	150.0	9.2	8
P	AL(27, 13)	NA(24, 11)	150.0	9.6	7
P	AL(27, 13)	NA(24, 11)	168.0	10.1 + 0.3	19
P	AL(27, 13)	NA(24, 11)	175.0	8.9	8
P	AL(27, 13)	NA(24, 11)	196.0	9.92 + 0.3	19
P	AL(27, 13)	NA(24, 11)	200.0	9.1	21
P	AL(27, 13)	NA(24, 11)	200.0	9.2	8
P	AL(27, 13)	NA(24, 11)	202.0	9.6	10
P	AL(27, 13)	NA(24, 11)	225.0	9.3	8
P	AL(27, 13)	NA(24, 11)	225.0	10.1 + 0.3	19
P	AL(27, 13)	NA(24, 11)	250.0	9.9	8
P	AL(27, 13)	NA(24, 11)	259.0	9.75	10
P	AL(27, 13)	NA(24, 11)	263.0	11.2 + 0.4	19
P	AL(27, 13)	NA(24, 11)	275.0	10.4	8
P	AL(27, 13)	NA(24, 11)	294.0	9.97	10
P	AL(27, 13)	NA(24, 11)	300.0	11.0	21
P	AL(27, 13)	NA(24, 11)	300.0	11.2	8
P	AL(27, 13)	NA(24, 11)	325.0	11.3	8
P	AL(27, 13)	NA(24, 11)	330.0	11.7 + 0.4	19
P	AL(27, 13)	NA(24, 11)	335.0	11.3	8
P	AL(27, 13)	NA(24, 11)	340.0	11.5	8
P	AL(27, 13)	NA(24, 11)	342.0	10.10	10
P	AL(27, 13)	NA(24, 11)	342.0	10.1 + .3838	3
P	AL(27, 13)	NA(24, 11)	350.0	11.2	8
P	AL(27, 13)	NA(24, 11)	350.0	11.1 + 0.2	8
P	AL(27, 13)	NA(24, 11)	400.0	11.3	21
P	AL(27, 13)	NA(24, 11)	426.0	11.9 + 0.4	19
P	AL(27, 13)	NA(23, 11)	155.0	23.0	22
P	AL(27, 13)	NA(22, 11)	29.7	2.4 + 0.2	6
P	AL(27, 13)	NA(22, 11)	37.4	34.2 + 0.9	6
P	AL(27, 13)	NA(22, 11)	44.1	46.8 + 1.2	6
P	AL(27, 13)	NA(22, 11)	50.1	38.4 + 1.0	6
P	AL(27, 13)	NA(22, 11)	50.6	36.4 + 3.6	6
P	AL(27, 13)	NA(22, 11)	80.0	24.0	7
P	AL(27, 13)	NA(22, 11)	100.0	21.5	7
P	AL(27, 13)	NA(22, 11)	150.0	18.0	7
P	AL(27, 13)	NA(22, 11)	155.0	17.5 + 0.6	23
P	AL(27, 13)	NA(22, 11)	335.0	13.6	8
P	AL(27, 13)	F(18, 9)	202.0	5.38	10
P	AL(27, 13)	F(18, 9)	259.0	5.85	10
P	AL(27, 13)	F(18, 9)	294.0	6.18	10
P	AL(27, 13)	F(18, 9)	335.0	6.2	8
P	AL(27, 13)	F(18, 9)	342.0	6.46	10
P	AL(27, 13)	F(18, 9)	342.0	6.8 + 0.68	3
P	AL(27, 13)	F(18, 9)	410.0	7.2 + .72	8
P	AL(27, 13)	F(18, 9)	420.0	7.6 + 0.21	24
P	AL(27, 13)	F(18, 9)	420.0	8.4	8
P	AL(27, 13)	N(13, 7)	410.0	0.78	8
P	AL(27, 13)	N(13, 7)	420.0	1.07 + .11	24
P	AL(27, 13)	C(11, 6)	335.0	2.1	8
P	AL(27, 13)	C(11, 6)	410.0	3.0	8
P	AL(27, 13)	C(11, 6)	420.0	2.25 + 0.11	24
P	AL(27, 13)	BE(7, 4)	335.0	1.6	8
P	AL(27, 13)	H(3, 1)	120.0	16.0 + 5.0	8

INC. PART	TARGET NUCLEUS	RESIDUAL NUCLEUS	ENERGY (MEV)	SIGMA (MB) EXPERIMENT	REF
P	AL(27, 13)	H(3, 1)	200.0	18.0 + 6.0	8
P	AL(27, 13)	H(3, 1)	300.0	25.0 + 7.0	8
P	SI(, 14)	NA(24, 11)	130.0	3.378 + .660	13
P	SI(, 14)	NA(24, 11)	208.0	3.662 + 0.366	13
P	SI(, 14)	NA(24, 11)	297.0	4.740 + 0.474	13
P	SI(, 14)	NA(24, 11)	396.0	4.78 + 0.478	13
P	SI(, 14)	NA(22, 11)	130.0	10.41 + 1.06	13
P	SI(, 14)	NA(22, 11)	208.0	10.28 + 1.03	13
P	SI(, 14)	NA(22, 11)	297.0	13.09 + 1.3	13
P	SI(, 14)	NA(22, 11)	396.0	12.46 + 1.3	13
P	SI(, 14)	BE(7, 4)	130.0	1.07 + 0.27	13
P	SI(, 14)	BE(7, 4)	208.0	0.76 + 0.19	13
P	SI(, 14)	BE(7, 4)	297.0	1.69 + 0.34	13
P	SI(, 14)	BE(7, 4)	396.0	2.02 + 0.40	13
P	SI(30, 14)	AL(29, 13)	130.0	10.7 + 2.8	25
P	SI(30, 14)	AL(29, 13)	210.0	10.2 + 1.7	25
P	SI(30, 14)	AL(29, 13)	300.0	20.8 + 4.6	25
P	SI(30, 14)	AL(29, 13)	400.0	18.6 + 3.7	25
P	SI(30, 14)	MG(28, 12)	130.0	2.05 + 0.46	25
P	SI(30, 14)	MG(28, 12)	210.0	1.71 + 0.35	25
P	SI(30, 14)	MG(28, 12)	300.0	2.15 + 0.35	25
P	SI(30, 14)	MG(28, 12)	400.0	2.80 + 0.35	25
P	P(31, 15)	AL(29, 13)	130.0	4.33 + 0.72	25
P	P(31, 15)	AL(29, 13)	210.0	6.70 + 1.10	25
P	P(31, 15)	AL(29, 13)	300.0	4.35 + 0.80	25
P	P(31, 15)	AL(29, 13)	400.0	8.13 + 1.59	25
P	P(31, 15)	MG(28, 12)	130.0	0.189 + 0.022	25
P	P(31, 15)	MG(28, 12)	210.0	0.207 + 0.034	25
P	P(31, 15)	MG(28, 12)	300.0	0.328 + 0.065	25
P	P(31, 15)	MG(28, 12)	400.0	0.277 + 0.062	25
P	S(, 16)	AL(29, 13)	130.0	0.565 + 0.141	25
P	S(, 16)	AL(29, 13)	210.0	0.414 + 0.091	25
P	S(, 16)	AL(29, 13)	300.0	0.603 + 0.070	25
P	S(, 16)	AL(29, 13)	400.0	0.529 + 0.144	25
P	S(, 16)	MG(28, 12)	130.0	(4.31 + 2.06)E-3	25
P	S(, 16)	MG(28, 12)	210.0	(5.48 + 0.82)E-3	25
P	S(, 16)	MG(28, 12)	300.0	(9.05 + 0.01)E-3	25
P	S(, 16)	MG(28, 12)	400.0	(4.60 + 1.04)E-3	25
P	S(32, 16)	AL(29, 13)	130.0	0.590	25
P	S(32, 16)	AL(29, 13)	400.0	0.578	25
P	S(32, 16)	MG(28, 12)	130.0	.00471	25
P	S(32, 16)	MG(28, 12)	400.0	.00410	25
P	CL(, 17)	P(32, 15)	192.0	45.4	8
P	CL(, 17)	P(32, 15)	240.0	46.8	8
P	CL(, 17)	P(32, 15)	288.0	44.0	8
P	CL(, 17)	P(32, 15)	330.0	48.1	8
P	CL(, 17)	P(32, 15)	378.0	39.8	8
P	CL(, 17)	MG(28, 12)	192.0	0.103	8
P	CL(, 17)	MG(28, 12)	237.0	0.149	8
P	CL(, 17)	MG(28, 12)	240.0	0.170	8
P	CL(, 17)	MG(28, 12)	288.0	0.200	8
P	CL(, 17)	MG(28, 12)	330.0	0.205	8
P	CL(, 17)	MG(28, 12)	378.0	0.205	8
P	CL(, 17)	NA(24, 11)	192.0	4.7	8
P	CL(, 17)	NA(24, 11)	237.0	5.0	8

INC. PART	TARGET NUCLEUS	RESIDUAL NUCLEUS	ENERGY (MEV)	SIGMA (MB) EXPERIMENT	REF
P	CL(, 17)	NA(24, 11)	288.0	5.9	8
P	CL(, 17)	NA(24, 11)	330.0	6.6	8
P	CL(, 17)	NA(24, 11)	378.0	7.4	8
P	CL(37, 17)	S(35, 16)	67.0	11.0 + 2.75	8
P	CL(37, 17)	S(35, 16)	92.0	6.37 + 1.5925	8
P	CL(37, 17)	S(35, 16)	142.0	7.11	8
P	CL(37, 17)	S(35, 16)	162.0	8.41	8
P	CL(37, 17)	S(35, 16)	192.0	6.82	8
P	CL(37, 17)	S(35, 16)	237.0	6.93	8
P	CL(37, 17)	S(35, 16)	240.0	5.95	8
P	CL(37, 17)	S(35, 16)	288.0	7.79	8
P	CL(37, 17)	S(35, 16)	330.0	8.44	8
P	CL(37, 17)	S(35, 16)	378.0	6.65	8
P	CL(37, 17)	P(32, 15)	67.0	52.1 + 13.025	8
P	CL(37, 17)	P(32, 15)	92.0	48.2 + 12.05	8
P	CL(37, 17)	P(32, 15)	142.0	33.7	8
P	CL(37, 17)	P(32, 15)	162.0	33.5	8
P	CL(37, 17)	MG(28, 12)	67.0	0.0068 + .0017	8
P	CL(37, 17)	MG(28, 12)	92.0	0.020 + .005	8
P	CL(37, 17)	MG(28, 12)	142.0	0.046	8
P	CL(37, 17)	MG(28, 12)	162.0	0.073	8
P	CL(37, 17)	NA(24, 11)	92.0	0.7 + .175	8
P	CL(37, 17)	NA(24, 11)	142.0	1.3	8
P	CL(37, 17)	NA(24, 11)	162.0	2.3	8
P	A(, 18)	LI(8, 3)	340.0	0.22 + 0.07	8
P	CA(48, 20)	SC(48, 21)	120.0	7.8+ 0.3	19
P	CA(48, 20)	SC(48, 21)	200.0	4.7 + 1.2	19
P	CA(48, 20)	SC(48, 21)	300.0	4.1 + 0.3	19
P	CA(48, 20)	SC(48, 21)	400.0	3.6 + 0.1	19
P	CA(48, 20)	SC(47, 21)	120.0	20.3 + 1.6	19
P	CA(48, 20)	SC(47, 21)	200.0	18.6 + 0.6	19
P	CA(48, 20)	SC(47, 21)	300.0	11.0 + 0.1	19
P	CA(48, 20)	SC(47, 21)	400.0	8.7 + 0.3	19
P	CA(48, 20)	CA(47, 20)	120.0	118.0 + 2.0	19
P	CA(48, 20)	CA(47, 20)	200.0	106.0 + 10.0	19
P	CA(48, 20)	CA(47, 20)	300.0	106.0 + 4.0	19
P	CA(48, 20)	CA(47, 20)	400.0	101.0 + 4.0	19
P	SC(45, 21)	TI(45, 22)	120.0	3.80 + 0.07	21
P	SC(45, 21)	TI(45, 22)	200.0	2.29 + 0.03	21
P	SC(45, 21)	TI(45, 22)	300.0	1.82 + 0.04	21
P	SC(45, 21)	TI(45, 22)	400.0	1.40 + 0.07	21
P	SC(45, 21)	SC(44, 21)	120.0	70.1 + 1.8	21
P	SC(45, 21)	SC(44, 21)	200.0	50.4 + 1.2	21
P	SC(45, 21)	SC(44, 21)	300.0	48.5 + 1.2	21
P	SC(45, 21)	SC(44, 21)	370.0	34.5 + 1.6	26
P	SC(45, 21)	SC(44, 21)	400.0	47.7 + 1.0	21
P	TI(48, 22)	V(48, 23)	155.0	3.2 + 0.5	2
P	V(51, 23)	CR(51, 24)	30.0	78.0 + 12.0	5
P	V(51, 23)	CR(51, 24)	55.0	33.0 + 6.0	5
P	V(51, 23)	CR(51, 24)	95.0	16.0 + 3.0	5
P	V(51, 23)	CR(51, 24)	150.0	14.0 + 2.0	5
P	V(51, 23)	CR(51, 24)	155.0	4.8 + 0.7	2
P	V(51, 23)	CR(49, 24)	60.0	31.3 + 7.3	8
P	V(51, 23)	CR(49, 24)	100.0	12.0 + 2.1	8
P	V(51, 23)	CR(49, 24)	170.0	1.7 + 0.4	8

INC. PART	TARGET NUCLEUS	RESIDUAL NUCLEUS	ENERGY (MEV)	SIGMA (MB) EXPERIMENT	REF
P	V(51, 23)	CR(49, 24)	175.0	4.8	8
P	V(51, 23)	CR(49, 24)	240.0	2.2 + 0.4	8
P	V(51, 23)	CR(48, 24)	60.0	1.2 + 0.4	8
P	V(51, 23)	CR(48, 24)	100.0	1.5 + 0.6	8
P	V(51, 23)	CR(48, 24)	170.0	0.22 + 0.07	8
P	V(51, 23)	CR(48, 24)	175.0	0.18	8
P	V(51, 23)	CR(48, 24)	240.0	0.24 + 0.04	8
P	V(51, 23)	V(48, 23)	60.0	32.0 + 1.5	8
P	V(51, 23)	V(48, 23)	100.0	26.0 + 5.0	8
P	V(51, 23)	V(48, 23)	170.0	23.0 + 4.0	8
P	V(51, 23)	V(48, 23)	170.0	11.5 + 3.4	8
P	V(51, 23)	V(48, 23)	240.0	12.6 + 4.2	8
P	V(51, 23)	V(47, 23)	170.0	4.6 + 0.9	8
P	V(51, 23)	TI(45, 22)	60.0	0.9 + 0.2	8
P	V(51, 23)	TI(45, 22)	100.0	4.1 + 1.0	8
P	V(51, 23)	TI(45, 22)	170.0	4.8 + 1.2	8
P	V(51, 23)	TI(45, 22)	175.0	4.2 + 1.2	8
P	V(51, 23)	TI(45, 22)	240.0	8.4 + 3.3	8
P	V(51, 23)	SC(49, 21)	130.0	0.158 + 0.035	25
P	V(51, 23)	SC(49, 21)	210.0	0.227 + 0.037	25
P	V(51, 23)	SC(49, 21)	300.0	0.472 + 0.076	25
P	V(51, 23)	SC(49, 21)	400.0	0.391 + 0.048	25
P	V(51, 23)	SC(48, 21)	170.0	4.1 + 1.1	8
P	V(51, 23)	SC(47, 21)	60.0	1.2 + 0.7	8
P	V(51, 23)	SC(47, 21)	100.0	7.7 + 1.4	8
P	V(51, 23)	SC(47, 21)	170.0	7.6 + 1.5	8
P	V(51, 23)	SC(47, 21)	175.0	3.3 + 1.4	8
P	V(51, 23)	SC(47, 21)	240.0	6.3 + 2.0	8
P	V(51, 23)	SC(46, 21)	50.0	18.0 + 3.0	15
P	V(51, 23)	SC(46, 21)	60.0	4.2 + 2.3	8
P	V(51, 23)	SC(46, 21)	95.0	12.0 + 2.0	15
P	V(51, 23)	SC(46, 21)	100.0	7.0 + 1.4	8
P	V(51, 23)	SC(46, 21)	142.0	16.8 + 2.5	15
P	V(51, 23)	SC(46, 21)	170.0	12.0 + 4.0	8
P	V(51, 23)	SC(46, 21)	175.0	4.3 + 2.0	8
P	V(51, 23)	SC(46, 21)	240.0	7.0 + 1.9	8
P	V(51, 23)	SC(44, 21)	100.0	7.0 + 2.8	8
P	V(51, 23)	SC(44, 21)	170.0	6.2 + 1.7	8
P	V(51, 23)	SC(44, 21)	175.0	3.1 + 1.8	8
P	V(51, 23)	SC(44, 21)	240.0	6.7 + 2.1	8
P	V(51, 23)	SC(, 21)	60.0	0.03	8
P	V(51, 23)	SC(, 21)	100.0	14.0 + 4.2	8
P	V(51, 23)	SC(, 21)	170.0	9.4 + 2.2	8
P	V(51, 23)	SC(, 21)	175.0	5.0 + 2.7	8
P	V(51, 23)	SC(, 21)	240.0	10.0 + 3.3	8
P	V(51, 23)	CA(47, 20)	60.0	0.004	8
P	V(51, 23)	CA(47, 20)	100.0	0.06 + 0.01	8
P	V(51, 23)	CA(47, 20)	170.0	0.087 + 0.019	8
P	V(51, 23)	CA(47, 20)	175.0	0.05 + 0.03	8
P	V(51, 23)	CA(47, 20)	240.0	0.12 + 0.04	8
P	V(51, 23)	CA(45, 20)	60.0	0.12	8
P	V(51, 23)	CA(45, 20)	100.0	0.7 + 0.4	8
P	V(51, 23)	CA(45, 20)	170.0	2.5 + 0.6	8
P	V(51, 23)	CA(45, 20)	175.0	0.7 + 0.3	8
P	V(51, 23)	CA(45, 20)	240.0	1.4 + 0.6	8

INC. PART	TARGET NUCLEUS	RESIDUAL NUCLEUS	ENERGY (MEV)	SIGMA (MB) EXPERIMENT	REF
P	V(51, 23)	K(43, 19)	60.0	0.2 + 0.08	8
P	V(51, 23)	K(43, 19)	100.0	0.5	8
P	V(51, 23)	K(43, 19)	170.0	2.0 + 0.6	8
P	V(51, 23)	K(43, 19)	175.0	1.0 + 0.4	8
P	V(51, 23)	K(43, 19)	240.0	3.4 + 0.8	8
P	V(51, 23)	K(42, 19)	60.0	0.07 + 0.06	8
P	V(51, 23)	K(42, 19)	100.0	1.8	8
P	V(51, 23)	K(42, 19)	170.0	3.2 + 0.8	8
P	V(51, 23)	K(42, 19)	175.0	2.4 + 0.8	8
P	V(51, 23)	K(42, 19)	240.0	5.9 + 1.0	8
P	V(51, 23)	CL(39, 17)	60.0	0.0003	8
P	V(51, 23)	CL(39, 17)	100.0	0.25 + 0.001	8
P	V(51, 23)	CL(39, 17)	170.0	0.25 + 0.06	8
P	V(51, 23)	CL(39, 17)	175.0	0.14 + 0.05	8
P	V(51, 23)	CL(39, 17)	240.0	1.3 + 0.8	8
P	V(51, 23)	CL(38, 17)	60.0	0.008 + 0.004	8
P	V(51, 23)	CL(38, 17)	100.0	0.13 + 0.01	8
P	V(51, 23)	CL(38, 17)	170.0	0.60 + 0.13	8
P	V(51, 23)	CL(38, 17)	175.0	0.7 + 0.4	8
P	V(51, 23)	CL(38, 17)	240.0	2.0 + 0.9	8
P	V(51, 23)	CL(34, 17)	170.0	0.025 + 0.006	8
P	V(51, 23)	CL(34, 17)	240.0	0.6 + 0.3	8
P	V(51, 23)	S(35, 16)	100.0	0.06	8
P	V(51, 23)	S(35, 16)	170.0	0.46 + 0.13	8
P	V(51, 23)	S(35, 16)	175.0	0.15 + 0.05	8
P	V(51, 23)	S(35, 16)	240.0	0.3 + 0.2	8
P	V(51, 23)	P(33, 15)	170.0	0.28 + 0.08	8
P	V(51, 23)	P(33, 15)	240.0	0.3	8
P	V(51, 23)	P(32, 15)	170.0	0.35 + 0.09	8
P	V(51, 23)	P(32, 15)	175.0	0.15 + 0.03	8
P	V(51, 23)	P(32, 15)	240.0	0.8 + 0.4	8
P	V(51, 23)	SI(31, 14)	170.0	0.16 + 0.04	8
P	V(51, 23)	MG(28, 12)	175.0	0.001	8
P	V(51, 23)	MG(28, 12)	240.0	0.008	8
P	V(51, 23)	MG(27, 12)	170.0	0.023 + 0.007	8
P	V(51, 23)	NA(24, 11)	170.0	0.024 + 0.055	8
P	CR(50, 24)	CR(49, 24)	370.0	48.2 + 2.9	26
P	CR(52, 24)	MN(52, 25)	155.0	3.9 + 0.6	2
P	CR(52, 24)	MN(52, 25)	370.0	1.43	26
P	CR(52, 24)	MN(52, 25)	370.0	1.46	26
P	CR(52, 24)	MN(52, 25)	370.0	1.45 + 0.10	26
P	CR(52, 24)	MN(51, 25)	370.0	0.86	26
P	CR(52, 24)	MN(51, 25)	370.0	0.80	26
P	CR(52, 24)	MN(51, 25)	370.0	0.83 + 0.07	26
P	CR(52, 24)	CR(51, 24)	370.0	59.2 + 4.5	26
P	CR(52, 24)	CR(49, 24)	370.0	5.6	26
P	CR(52, 24)	CR(49, 24)	370.0	6.2	26
P	CR(52, 24)	CR(49, 24)	370.0	5.9 + 0.6	26
P	MN(55, 25)	FE(52, 26)	170.0	0.24 + 0.07	8
P	MN(55, 25)	MN(54, 25)	15.0	152.0 + 50.0	18
P	MN(55, 25)	MN(54, 25)	22.0	435.0 + 45.0	18
P	MN(55, 25)	MN(54, 25)	26.0	458.0 + 50.0	18
P	MN(55, 25)	MN(54, 25)	31.0	438.0 + 45.0	18
P	MN(55, 25)	MN(54, 25)	38.0	321.0 + 35.0	18
P	MN(55, 25)	MN(54, 25)	44.0	294.0 + 30.0	18

INC. PART	TARGET NUCLEUS	RESIDUAL NUCLEUS	ENERGY (MEV)	SIGMA (MB) EXPERIMENT	REF
P	MN(55, 25)	MN(54, 25)	52.5	265.0 + 28.0	18
P	MN(55, 25)	MN(54, 25)	61.0	193.0 + 20.0	18
P	MN(55, 25)	MN(54, 25)	68.5	180.0 + 20.0	18
P	MN(55, 25)	MN(54, 25)	77.0	162.0 + 18.0	18
P	MN(55, 25)	MN(54, 25)	86.5	161.0 + 18.0	18
P	MN(55, 25)	MN(54, 25)	103.0	140.0 + 15.0	18
P	MN(55, 25)	MN(54, 25)	117.0	111.0 + 12.0	18
P	MN(55, 25)	MN(54, 25)	134.0	86.0 + 10.0	18
P	MN(55, 25)	MN(54, 25)	152.0	89.0 + 10.0	18
P	MN(55, 25)	MN(54, 25)	370.0	61.1 + 2.3	26
P	MN(55, 25)	MN(52, 25)	170.0	10.0 + 4.0	8
P	MN(55, 25)	MN(52, 25)	170.0	16.0 + 3.0	8
P	MN(55, 25)	MN(51, 25)	170.0	5.9 + 1.5	8
P	MN(55, 25)	CR(49, 24)	170.0	6.4 + 1.0	8
P	MN(55, 25)	CR(48, 24)	170.0	0.70 + 0.14	8
P	MN(55, 25)	V(48, 23)	170.0	13.0 + 3.0	8
P	MN(55, 25)	V(48, 23)	170.0	2.7 + 0.6	8
P	MN(55, 25)	TI(45, 22)	170.0	5.0 + 1.1	8
P	MN(55, 25)	SC(48, 21)	170.0	0.70 + 0.26	8
P	MN(55, 25)	SC(47, 21)	170.0	2.5 + 0.5	8
P	MN(55, 25)	SC(46, 21)	170.0	5.7 + 1.0	8
P	MN(55, 25)	SC(44, 21)	170.0	2.4 + 0.5	8
P	MN(55, 25)	SC(, 21)	170.0	3.4 + 0.8	8
P	MN(55, 25)	CA(47, 20)	170.0	0.031 + 0.009	8
P	MN(55, 25)	CA(45, 20)	170.0	1.1 + 0.3	8
P	MN(55, 25)	K(43, 19)	170.0	0.50 + 0.11	8
P	MN(55, 25)	K(42, 19)	170.0	1.4 + 0.2	8
P	MN(55, 25)	CL(39, 17)	170.0	0.033 + 0.009	8
P	MN(55, 25)	CL(, 17)	170.0	0.060 + 0.015	8
P	MN(55, 25)	P(32, 15)	170.0	0.11 + 0.04	8
P	MN(55, 25)	SI(31, 14)	170.0	0.083 + 0.023	8
P	FE(, 26)	CO(56, 27)	130.0	4.25 + 0.85	13
P	FE(, 26)	CO(56, 27)	208.0	2.26 + 0.34	13
P	FE(, 26)	CO(56, 27)	297.0	1.50 + 0.22	13
P	FE(, 26)	CO(56, 27)	396.0	0.89 + 0.13	13
P	FE(, 26)	MN(54, 25)	130.0	38.2 + 7.6	13
P	FE(, 26)	MN(54, 25)	208.0	27.7 + 4.2	13
P	FE(, 26)	MN(54, 25)	297.0	21.4 + 3.2	13
P	FE(, 26)	MN(54, 25)	396.0	18.63 + 2.8	13
P	FE(, 26)	MN(53, 25)	396.0	24.2 + 4.0	13
P	FE(, 26)	MN(52, 25)	130.0	68.6 + 10.3	13
P	FE(, 26)	MN(52, 25)	208.0	49.0 + 7.4	13
P	FE(, 26)	MN(52, 25)	297.0	33.7 + 5.1	13
P	FE(, 26)	CR(51, 24)	130.0	30.0 + 6.0	13
P	FE(, 26)	CR(51, 24)	208.0	22.0 + 3.00	13
P	FE(, 26)	CR(51, 24)	297.0	25.0 + 3.75	13
P	FE(, 26)	CR(51, 24)	396.0	25.0 + 3.75	13
P	FE(, 26)	V(48, 23)	130.0	5.87	13
P	FE(, 26)	V(48, 23)	208.0	6.40	13
P	FE(, 26)	V(48, 23)	297.0	8.50	13
P	FE(, 26)	V(48, 23)	396.0	9.50	13
P	FE(, 26)	A(37, 18)	160.0	0.19	8
P	FE(, 26)	P(32, 15)	130.0	0.020 + 0.004	13
P	FE(, 26)	P(32, 15)	208.0	0.086 + 0.013	13
P	FE(, 26)	P(32, 15)	297.0	0.320 + 0.050	13

INC. PART	TARGET NUCLEUS	RESIDUAL NUCLEUS	ENERGY (MEV)	SIGMA (MB) EXPERIMENT	REF
P	FE(, 26)	P(32, 15)	396.0	0.61 + 0.092	13
P	FE(, 26)	BE(7, 4)	130.0	0.175 + 0.035	13
P	FE(, 26)	BE(7, 4)	208.0	0.313 + 0.047	13
P	FE(, 26)	BE(7, 4)	297.0	0.47 + 0.071	13
P	FE(, 26)	BE(7, 4)	396.0	0.57 + 0.086	13
P	FE(, 26)	HE(4, 2)	160.0	120.0	8
P	FE(, 26)	HE(3, 2)	160.0	11.0	8
P	FE(, 26)	H(3, 1)	50.0	4.2	8
P	FE(, 26)	H(3, 1)	75.0	4.3 + 0.8	8
P	FE(, 26)	H(3, 1)	93.0	5.0 + 1.0	8
P	FE(, 26)	H(3, 1)	100.0	4.8 + 0.9	8
P	FE(, 26)	H(3, 1)	135.0	6.4 + 1.2	8
P	FE(, 26)	H(3, 1)	150.0	6.1 + 1.1	8
P	FE(, 26)	H(3, 1)	160.0	7.2	8
P	FE(, 26)	H(3, 1)	175.0	6.6 + 1.2	8
P	FE(54, 26)	FE(53, 26)	400.0	48.0	8
P	FE(54, 26)	FE(53, 26)	400.0	45.0	8
P	FE(56, 26)	CO(56, 27)	150.0	1.6 + 0.3	4
P	FE(56, 26)	CO(56, 27)	340.0	0.24	8
P	FE(56, 26)	CO(56, 27)	370.0	.91	26
P	FE(56, 26)	CO(56, 27)	370.0	.95	26
P	FE(56, 26)	CO(56, 27)	370.0	.90	26
P	FE(56, 26)	CO(56, 27)	370.0	.92 + 0.06	26
P	FE(56, 26)	CO(55, 27)	150.0	1.7 + 0.4	4
P	FE(56, 26)	CO(55, 27)	340.0	0.49	8
P	FE(56, 26)	CO(55, 27)	370.0	0.76	26
P	FE(56, 26)	CO(55, 27)	370.0	0.79	26
P	FE(56, 26)	CO(55, 27)	370.0	0.76	26
P	FE(56, 26)	CO(55, 27)	370.0	.77 + 0.08	26
P	FE(56, 26)	FE(55, 26)	150.0	110.0 + 10.0	4
P	FE(56, 26)	FE(55, 26)	370.0	63.9 + 3.8	26
P	FE(56, 26)	FE(53, 26)	150.0	30.0 + 2.0	4
P	FE(56, 26)	FE(52, 26)	150.0	5.2 + 1.4	4
P	FE(56, 26)	FE(52, 26)	340.0	0.68	8
P	FE(56, 26)	MN(56, 25)	150.0	0.7 + 0.2	4
P	FE(56, 26)	MN(56, 25)	340.0	0.59	8
P	FE(56, 26)	MN(54, 25)	150.0	36.0 + 16.0	4
P	FE(56, 26)	MN(54, 25)	340.0	12.0	8
P	FE(56, 26)	MN(52, 25)	150.0	14.0 + 3.0	4
P	FE(56, 26)	MN(52, 25)	340.0	12.9	8
P	FE(56, 26)	MN(51, 25)	150.0	5.8 + 1.2	4
P	FE(56, 26)	MN(51, 25)	340.0	4.0	8
P	FE(56, 26)	CR(51, 24)	150.0	63.0 + 19.0	4
P	FE(56, 26)	CR(51, 24)	340.0	41.0	8
P	FE(56, 26)	CR(49, 24)	150.0	6.1 + 1.7	4
P	FE(56, 26)	CR(49, 24)	340.0	4.8	8
P	FE(56, 26)	CR(48, 24)	150.0	0.5 + 0.1	4
P	FE(56, 26)	CR(48, 24)	340.0	0.80	8
P	FE(56, 26)	V(49, 23)	150.0	33.0 + 5.0	4
P	FE(56, 26)	V(49, 23)	340.0	31.0	8
P	FE(56, 26)	V(48, 23)	150.0	15.0 + 2.0	4
P	FE(56, 26)	V(48, 23)	340.0	10.3	8
P	FE(56, 26)	V(47, 23)	150.0	5.9 + 1.9	4
P	FE(56, 26)	V(47, 23)	340.0	2.4	8
P	FE(56, 26)	TI(45, 22)	150.0	4.5 + 1.0	4

INC. PART	TARGET NUCLEUS	RESIDUAL NUCLEUS	ENERGY (MEV)	SIGMA (MB) EXPERIMENT	REF
P	FE(56, 26)	TI(45, 22)	340.0	3.7	8
P	FE(56, 26)	SC(48, 21)	340.0	0.45	8
P	FE(56, 26)	SC(47, 21)	150.0	0.7 + 0.2	4
P	FE(56, 26)	SC(47, 21)	340.0	0.84	8
P	FE(56, 26)	SC(46, 21)	150.0	3.0 + 0.6	4
P	FE(56, 26)	SC(46, 21)	340.0	3.20	8
P	FE(56, 26)	SC(44, 21)	150.0	5.9 + 0.4	4
P	FE(56, 26)	SC(44, 21)	340.0	2.60	8
P	FE(56, 26)	SC(43, 21)	150.0	2.5 + 0.2	4
P	FE(56, 26)	SC(, 21)	340.0	2.0	8
P	FE(56, 26)	CA(47, 20)	150.0	0.007 + 0.002	4
P	FE(56, 26)	CA(47, 20)	340.0	0.007	8
P	FE(56, 26)	CA(45, 20)	150.0	0.36 + 0.06	4
P	FE(56, 26)	CA(45, 20)	340.0	0.56	8
P	FE(56, 26)	K(43, 19)	150.0	0.11 + 0.04	4
P	FE(56, 26)	K(43, 19)	340.0	0.4	8
P	FE(56, 26)	K(42, 19)	150.0	0.25 + 0.05	4
P	FE(56, 26)	K(42, 19)	340.0	0.7	8
P	FE(56, 26)	CL(39, 17)	150.0	0.024 + .008	4
P	FE(56, 26)	CL(39, 17)	340.0	0.045	8
P	FE(56, 26)	CL(38, 17)	340.0	0.17	8
P	FE(56, 26)	CL(34, 17)	150.0	0.11 + 0.03	4
P	FE(56, 26)	CL(34, 17)	340.0	0.11	8
P	FE(56, 26)	S(35, 16)	150.0	0.18 + 0.09	4
P	FE(56, 26)	S(35, 16)	340.0	0.23	8
P	FE(56, 26)	P(33, 15)	150.0	0.065 + 0.032	4
P	FE(56, 26)	P(32, 15)	150.0	0.2 + 0.1	4
P	FE(56, 26)	P(32, 15)	340.0	0.044	8
P	FE(56, 26)	SI(31, 14)	150.0	0.026 + 0.013	4
P	FE(56, 26)	SI(31, 14)	340.0	0.12	8
P	FE(56, 26)	MG(28, 12)	150.0	0.005 + 0.001	4
P	FE(56, 26)	NA(24, 11)	150.0	0.065 + 0.011	4
P	FE(56, 26)	NA(24, 11)	340.0	0.026	8
P	FE(56, 26)	NA(22, 11)	150.0	0.03 + 0.01	4
P	FE(56, 26)	NA(22, 11)	340.0	0.02	8
P	FE(56, 26)	F(18, 9)	150.0	0.014 + 0.003	4
P	FE(56, 26)	C(11, 6)	150.0	0.04 + 0.01	4
P	FE(56, 26)	BE(7, 4)	150.0	0.23 + 0.03	4
P	CO(59, 27)	NI(57, 28)	170.0	1.1 + 0.2	8
P	CO(59, 27)	NI(57, 28)	370.0	0.24 + 0.06	8
P	CO(59, 27)	CO(58, 27)	60.0	865.0	8
P	CO(59, 27)	CO(58, 27)	60.0	369.0 + 184.0	8
P	CO(59, 27)	CO(58, 27)	60.0	296.0 + 148.0	8
P	CO(59, 27)	CO(58, 27)	100.0	218.0 + 109.0	8
P	CO(59, 27)	CO(58, 27)	100.0	316.0 + 158.0	8
P	CO(59, 27)	CO(58, 27)	100.0	232.0 + 116.0	8
P	CO(59, 27)	CO(58, 27)	170.0	121.0 + 61.0	8
P	CO(59, 27)	CO(58, 27)	170.0	128.0 + 64.0	8
P	CO(59, 27)	CO(58, 27)	170.0	185.0	8
P	CO(59, 27)	CO(58, 27)	240.0	120.0	8
P	CO(59, 27)	CO(58, 27)	240.0	117.0 + 59.0	8
P	CO(59, 27)	CO(58, 27)	240.0	92.0 + 46.0	8
P	CO(59, 27)	CO(58, 27)	240.0	92.0 + 46.0	8
P	CO(59, 27)	CO(58, 27)	370.0	87.0 + 43.0	8
P	CO(59, 27)	CO(58, 27)	370.0	57.7 + 3.2	26

INC. PART	TARGET NUCLEUS	RESIDUAL NUCLEUS	ENERGY (MEV)	SIGMA (MB) EXPERIMENT	REF
P	CO(59, 27)	CO(57, 27)	370.0	36.6	26
P	CO(59, 27)	CO(57, 27)	370.0	35.5	26
P	CO(59, 27)	CO(57, 27)	370.0	41.5	26
P	CO(59, 27)	CO(57, 27)	370.0	37.9 + 3.2	26
P	CO(59, 27)	CO(56, 27)	60.0	50.0 + 25.0	8
P	CO(59, 27)	CO(56, 27)	60.0	42.0 + 21.0	8
P	CO(59, 27)	CO(56, 27)	100.0	53.0 + 27.0	8
P	CO(59, 27)	CO(56, 27)	100.0	77.0 + 39.0	8
P	CO(59, 27)	CO(56, 27)	100.0	57.0 + 29.0	8
P	CO(59, 27)	CO(56, 27)	170.0	20.0 + 10.0	8
P	CO(59, 27)	CO(56, 27)	170.0	21.0 + 11.0	8
P	CO(59, 27)	CO(56, 27)	240.0	22.0 + 11.0	8
P	CO(59, 27)	CO(56, 27)	240.0	17.0 + 8.0	8
P	CO(59, 27)	CO(56, 27)	240.0	17.0 + 8.0	8
P	CO(59, 27)	CO(56, 27)	370.0	11.4	26
P	CO(59, 27)	CO(56, 27)	370.0	11.1	26
P	CO(59, 27)	CO(56, 27)	370.0	12.9	26
P	CO(59, 27)	CO(56, 27)	370.0	11.8 + 1.0	26
P	CO(59, 27)	CO(56, 27)	370.0	10.9 + 2.7	8
P	CO(59, 27)	CO(55, 27)	60.0	2.2 + 0.4	8
P	CO(59, 27)	CO(55, 27)	100.0	15.0 + 2.8	8
P	CO(59, 27)	CO(55, 27)	170.0	6.3 + 1.3	8
P	CO(59, 27)	CO(55, 27)	170.0	6.3 + 1.3	8
P	CO(59, 27)	CO(55, 27)	240.0	5.5 + 1.1	8
P	CO(59, 27)	CO(55, 27)	370.0	3.7 + 0.9	8
P	CO(59, 27)	FE(55, 26)	170.0	270.0 + 110.0	8
P	CO(59, 27)	FE(55, 26)	370.0	26.5 + 6.4	8
P	CO(59, 27)	FE(53, 26)	370.0	1.2 + 0.4	8
P	CO(59, 27)	FE(52, 26)	60.0	0.0002 + 0.0001	8
P	CO(59, 27)	FE(52, 26)	60.0	0.0005 + 0.0002	8
P	CO(59, 27)	FE(52, 26)	100.0	0.33 + 0.098	8
P	CO(59, 27)	FE(52, 26)	100.0	0.44 + 0.13	8
P	CO(59, 27)	FE(52, 26)	100.0	0.41 + 0.13	8
P	CO(59, 27)	FE(52, 26)	170.0	0.46 + 0.08	8
P	CO(59, 27)	FE(52, 26)	170.0	0.44 + 0.13	8
P	CO(59, 27)	FE(52, 26)	170.0	0.44 + 0.19	8
P	CO(59, 27)	FE(52, 26)	240.0	0.56 + 0.17	8
P	CO(59, 27)	FE(52, 26)	240.0	0.49 + 0.15	8
P	CO(59, 27)	FE(52, 26)	370.0	0.20 + 0.05	8
P	CO(59, 27)	MN(56, 25)	60.0	5.8 + 1.5	8
P	CO(59, 27)	MN(56, 25)	60.0	3.3 + 0.88	8
P	CO(59, 27)	MN(56, 25)	100.0	9.8 + 2.1	8
P	CO(59, 27)	MN(56, 25)	100.0	9.8 + 2.1	8
P	CO(59, 27)	MN(56, 25)	100.0	9.8 + 2.1	8
P	CO(59, 27)	MN(56, 25)	170.0	12.0 + 2.0	8
P	CO(59, 27)	MN(56, 25)	170.0	7.0 + 2.0	8
P	CO(59, 27)	MN(56, 25)	170.0	8.0 + 2.0	8
P	CO(59, 27)	MN(56, 25)	240.0	13.0 + 3.0	8
P	CO(59, 27)	MN(56, 25)	240.0	13.0 + 3.0	8
P	CO(59, 27)	MN(56, 25)	240.0	7.5 + 1.9	8
P	CO(59, 27)	MN(56, 25)	370.0	2.7 + 0.7	8
P	CO(59, 27)	MN(54, 25)	370.0	18.2 + 5.0	8
P	CO(59, 27)	MN(52, 25)	60.0	0.46 + 0.1	8
P	CO(59, 27)	MN(52, 25)	60.0	0.58 + 0.15	8
P	CO(59, 27)	MN(52, 25)	100.0	25.0 + 6.0	8

INC. PART	TARGET NUCLEUS	RESIDUAL NUCLEUS	ENERGY (MEV)	SIGMA (MB) EXPERIMENT	REF
P	CO(59, 27)	MN(52, 25)	100.0	28.0 + 7.0	8
P	CO(59, 27)	MN(52, 25)	100.0	22.0 + 6.0	8
P	CO(59, 27)	MN(52, 25)	170.0	12.0 + 3.0	8
P	CO(59, 27)	MN(52, 25)	170.0	31.0 + 6.0	8
P	CO(59, 27)	MN(52, 25)	170.0	21.0 + 5.0	8
P	CO(59, 27)	MN(52, 25)	170.0	21.0 + 5.0	8
P	CO(59, 27)	MN(52, 25)	240.0	35.0 + 8.0	8
P	CO(59, 27)	MN(52, 25)	240.0	33.0 + 8.0	8
P	CO(59, 27)	MN(52, 25)	240.0	19.0 + 5.0	8
P	CO(59, 27)	MN(52, 25)	370.0	10.1 + 2.5	8
P	CO(59, 27)	MN(52, 25)	370.0	4.0 + 1.6	8
P	CO(59, 27)	MN(51, 25)	100.0	4.0 + 2.0	8
P	CO(59, 27)	MN(51, 25)	170.0	3.3 + 1.1	8
P	CO(59, 27)	MN(51, 25)	170.0	4.4 + 1.5	8
P	CO(59, 27)	MN(51, 25)	170.0	12.0 + 2.0	8
P	CO(59, 27)	MN(51, 25)	240.0	15.0 + 5.0	8
P	CO(59, 27)	MN(51, 25)	240.0	12.0 + 4.0	8
P	CO(59, 27)	MN(51, 25)	370.0	2.9 + 1.0	8
P	CO(59, 27)	CR(51, 24)	370.0	19.7 + 1.4	8
P	CO(59, 27)	CR(49, 24)	170.0	4.7 + 1.0	8
P	CO(59, 27)	CR(49, 24)	370.0	2.9 + 0.7	8
P	CO(59, 27)	CR(48, 24)	170.0	0.35 + 0.08	8
P	CO(59, 27)	V(49, 23)	370.0	22.3 + 6.4	8
P	CO(59, 27)	V(48, 23)	170.0	10.0 + 2.0	8
P	CO(59, 27)	V(48, 23)	370.0	7.6 + 2.0	8
P	CO(59, 27)	V(47, 23)	170.0	1.5 + 0.3	8
P	CO(59, 27)	V(47, 23)	370.0	1.5 + 0.7	8
P	CO(59, 27)	TI(45, 22)	170.0	1.8 + 0.4	8
P	CO(59, 27)	TI(45, 22)	370.0	2.5 + 0.6	8
P	CO(59, 27)	SC(48, 21)	170.0	0.25 + 0.12	8
P	CO(59, 27)	SC(47, 21)	170.0	1.2 + 0.2	8
P	CO(59, 27)	SC(46, 21)	170.0	2.5 + 0.5	8
P	CO(59, 27)	SC(46, 21)	370.0	1.6 + 0.2	8
P	CO(59, 27)	SC(44, 21)	170.0	1.2 + 0.2	8
P	CO(59, 27)	SC(44, 21)	370.0	2.5 + 1.0	8
P	CO(59, 27)	SC(, 21)	170.0	1.8 + 0.4	8
P	CO(59, 27)	SC(, 21)	370.0	3.6 + 1.2	8
P	CO(59, 27)	CA(47, 20)	370.0	0.04 + 0.02	8
P	CO(59, 27)	CA(45, 20)	370.0	0.47 + 0.24	8
P	CO(59, 27)	K(43, 19)	170.0	0.11 + 0.03	8
P	CO(59, 27)	K(43, 19)	370.0	0.36 + 0.16	8
P	CO(59, 27)	K(42, 19)	170.0	0.46 + 0.12	8
P	CO(59, 27)	K(42, 19)	370.0	0.61 + 0.20	8
P	CO(59, 27)	K(38, 19)	370.0	0.22 + 0.10	8
P	CO(59, 27)	CL(39, 17)	170.0	0.007 + 0.005	8
P	CO(59, 27)	CL(39, 17)	170.0	0.002 + 0.001	8
P	CO(59, 27)	CL(39, 17)	240.0	0.06 + 0.04	8
P	CO(59, 27)	CL(39, 17)	240.0	0.19 + 0.13	8
P	CO(59, 27)	CL(39, 17)	370.0	0.36 + 0.29	8
P	CO(59, 27)	CL(, 17)	60.0	0.002 + 0.001	8
P	CO(59, 27)	CL(, 17)	60.0	0.0015 + 0.0008	8
P	CO(59, 27)	CL(, 17)	100.0	0.08 + 0.04	8
P	CO(59, 27)	CL(, 17)	100.0	0.02 + 0.01	8
P	CO(59, 27)	CL(, 17)	170.0	0.012 + 0.006	8
P	CO(59, 27)	CL(, 17)	170.0	0.012 + 0.006	8

INC. PART	TARGET NUCLEUS	RESIDUAL NUCLEUS	ENERGY (MEV)	SIGMA (MB) EXPERIMENT	REF
P	CO(59, 27)	CL(, 17)	240.0	0.13 + 0.07	8
P	CO(59, 27)	CL(, 17)	240.0	0.18 + 0.09	8
P	CO(59, 27)	CL(, 17)	370.0	2.0 + 1.0	8
P	CO(59, 27)	P(33, 15)	370.0	0.02 + 0.01	8
P	CO(59, 27)	P(32, 15)	170.0	0.12 + 0.03	8
P	CO(59, 27)	P(32, 15)	370.0	0.21 + 0.07	8
P	CO(59, 27)	SI(31, 14)	170.0	0.05 + 0.02	8
P	CO(59, 27)	AL(29, 13)	370.0	(0.21)	8
P	CO(59, 27)	MG(27, 12)	370.0	(0.21)	8
P	CO(59, 27)	NA(24, 11)	370.0	0.05 + 0.02	8
P	CO(59, 27)	F(18, 9)	370.0	0.05 + 0.02	8
P	CO(59, 27)	C(11, 6)	370.0	0.04	8
P	NI(, 28)	CO(56, 27)	130.0	90.0	13
P	NI(, 28)	CO(56, 27)	208.0	59.0	13
P	NI(, 28)	CO(56, 27)	297.0	62.0	13
P	NI(, 28)	CO(56, 27)	396.0	45.0	13
P	NI(, 28)	MN(54, 25)	130.0	10.5 + 2.0	13
P	NI(, 28)	MN(54, 25)	208.0	8.5 + 1.3	13
P	NI(, 28)	MN(54, 25)	297.0	9.8 + 1.4	13
P	NI(, 28)	MN(54, 25)	396.0	6.95 + 1.0	13
P	NI(, 28)	MN(52, 25)	130.0	39.5 + 6.0	13
P	NI(, 28)	MN(52, 25)	208.0	33.5 + 5.6	13
P	NI(, 28)	MN(52, 25)	297.0	38.5 + 5.9	13
P	NI(, 28)	MN(52, 25)	396.0	28.0 + 4.3	13
P	NI(, 28)	CR(51, 24)	130.0	20.0 + 4.0	13
P	NI(, 28)	CR(51, 24)	208.0	19.0 + 2.8	13
P	NI(, 28)	CR(51, 24)	297.0	19.2 + 2.8	13
P	NI(, 28)	CR(51, 24)	396.0	18.0 + 2.7	13
P	NI(, 28)	V(48, 23)	130.0	3.50	13
P	NI(, 28)	V(48, 23)	208.0	4.62	13
P	NI(, 28)	V(48, 23)	297.0	6.50	13
P	NI(, 28)	V(48, 23)	396.0	7.50	13
P	NI(, 28)	P(32, 15)	130.0	0.0070 + 0.0014	13
P	NI(, 28)	P(32, 15)	208.0	0.025 + 0.004	13
P	NI(, 28)	P(32, 15)	297.0	0.1330 + 0.020	13
P	NI(, 28)	P(32, 15)	396.0	0.2720 + 0.041	13
P	NI(, 28)	BE(7, 4)	130.0	0.206 + 0.041	13
P	NI(, 28)	BE(7, 4)	208.0	0.380 + 0.070	13
P	NI(, 28)	BE(7, 4)	297.0	0.594 + 0.090	13
P	NI(, 28)	BE(7, 4)	396.0	0.810 + 0.122	13
P	NI(58, 28)	NI(57, 28)	370.0	29.4 + 1.0	26
P	NI(58, 28)	NI(57, 28)	400.0	52.0	8
P	NI(58, 28)	NI(57, 28)	400.0	47.0	8
P	NI(58, 28)	CO(57, 27)	370.0	32.8	26
P	NI(58, 28)	CO(57, 27)	370.0	31.4	26
P	NI(58, 28)	CO(57, 27)	370.0	32.8	26
P	NI(58, 28)	CO(57, 27)	370.0	32.3 + 1.3	26
P	CU(, 29)	ZN(65, 30)	340.0	0.23	8
P	CU(, 29)	ZN(63, 30)	90.0	10.0 + 2.5	8
P	CU(, 29)	ZN(63, 30)	190.0	2.0	8
P	CU(, 29)	ZN(63, 30)	340.0	1.10	8
P	CU(, 29)	ZN(62, 30)	90.0	8.0 + 2.0	8
P	CU(, 29)	ZN(62, 30)	190.0	2.0	8
P	CU(, 29)	ZN(62, 30)	340.0	0.80	8
P	CU(, 29)	CU(64, 29)	90.0	45.0 + 11.25	8

INC. PART	TARGET NUCLEUS	RESIDUAL NUCLEUS	ENERGY (MEV)	SIGMA (MB) EXPERIMENT	REF
P	CU(, 29)	CU(64, 29)	190.0	77.0	27
P	CU(, 29)	CU(64, 29)	340.0	22.5	8
P	CU(, 29)	CU(62, 29)	90.0	114.0 + 28.5	8
P	CU(, 29)	CU(62, 29)	190.0	42.0	8
P	CU(, 29)	CU(62, 29)	340.0	48.3	8
P	CU(, 29)	CU(61, 29)	90.0	65.0 + 16.25	8
P	CU(, 29)	CU(61, 29)	190.0	30.0	8
P	CU(, 29)	CU(61, 29)	340.0	23.0	8
P	CU(, 29)	CU(60, 29)	90.0	7.0 + 1.75	8
P	CU(, 29)	NI(57, 28)	90.0	0.9 + .225	8
P	CU(, 29)	NI(57, 28)	190.0	1.3	8
P	CU(, 29)	NI(57, 28)	340.0	1.81	8
P	CU(, 29)	CO(61, 27)	90.0	2.3 + .575	8
P	CU(, 29)	CO(61, 27)	190.0	2.0	8
P	CU(, 29)	CO(61, 27)	340.0	4.83	8
P	CU(, 29)	CO(58, 27)	340.0	57.5	8
P	CU(, 29)	CO(56, 27)	340.0	3.4	8
P	CU(, 29)	CO(55, 27)	90.0	0.6 + .15	8
P	CU(, 29)	CO(55, 27)	190.0	1.4	8
P	CU(, 29)	CO(55, 27)	340.0	2.3	8
P	CU(, 29)	FE(59, 26)	340.0	0.78	8
P	CU(, 29)	FE(55, 26)	340.0	11.2	8
P	CU(, 29)	FE(53, 26)	90.0	0.35 + .0875	8
P	CU(, 29)	FE(53, 26)	340.0	1.67	8
P	CU(, 29)	FE(52, 26)	90.0	0.008 + 0.002	8
P	CU(, 29)	FE(52, 26)	190.0	0.10	8
P	CU(, 29)	FE(52, 26)	340.0	0.18	8
P	CU(, 29)	MN(56, 25)	90.0	0.9 + 0.225	8
P	CU(, 29)	MN(56, 25)	190.0	1.6	8
P	CU(, 29)	MN(56, 25)	340.0	2.53	8
P	CU(, 29)	MN(54, 25)	340.0	12.2	8
P	CU(, 29)	MN(52, 25)	90.0	0.11 + 0.0275	8
P	CU(, 29)	MN(52, 25)	190.0	0.4	8
P	CU(, 29)	MN(52, 25)	340.0	7.1	8
P	CU(, 29)	MN(51, 25)	190.0	0.3	8
P	CU(, 29)	MN(51, 25)	340.0	1.63	8
P	CU(, 29)	CR(51, 24)	340.0	7.13	8
P	CU(, 29)	CR(49, 24)	90.0	0.011 + 0.00275	8
P	CU(, 29)	CR(49, 24)	190.0	0.7	8
P	CU(, 29)	CR(49, 24)	340.0	0.94	8
P	CU(, 29)	V(48, 23)	90.0	0.023 + 0.00575	8
P	CU(, 29)	V(48, 23)	190.0	2.6	8
P	CU(, 29)	V(48, 23)	340.0	0.73	8
P	CU(, 29)	TI(45, 22)	340.0	1.00	8
P	CU(, 29)	SC(47, 21)	340.0	0.75	8
P	CU(, 29)	SC(46, 21)	340.0	1.72	8
P	CU(, 29)	SC(44, 21)	340.0	1.42	8
P	CU(, 29)	SC(, 21)	340.0	1.61	8
P	CU(, 29)	CA(47, 20)	340.0	0.0092	8
P	CU(, 29)	CA(45, 20)	340.0	0.161	8
P	CU(, 29)	K(42, 19)	370.0	0.055	8
P	CU(, 29)	CL(39, 17)	340.0	0.0092	8
P	CU(, 29)	CL(38, 17)	340.0	0.0575	8
P	CU(, 29)	CL(34, 17)	340.0	0.0183	8
P	CU(, 29)	P(32, 15)	340.0	0.12	8

INC. PART	TARGET NUCLEUS	RESIDUAL NUCLEUS	ENERGY (MEV)	SIGMA (MB) EXPERIMENT	REF
P	CU(, 29)	NA(24, 11)	340.0	0.029	8
P	CU(, 29)	NA(24, 11)	370.0	0.033	8
P	CU(, 29)	NA(22, 11)	340.0	0.036	8
P	CU(, 29)	F(18, 9)	370.0	0.033	8
P	CU(, 29)	C(11, 6)	370.0	0.033	8
P	CU(63, 29)	CU(62, 29)	400.0	73.0 + 7.3	8
P	CU(63, 29)	CU(62, 29)	400.0	64.0 + 6.4	8
P	CU(65, 29)	ZN(65, 30)	45.0	41.0 + 6.0	5
P	CU(65, 29)	ZN(65, 30)	55.0	28.0 + 4.0	5
P	CU(65, 29)	ZN(65, 30)	100.0	17.0 + 3.0	5
P	CU(65, 29)	ZN(65, 30)	143.0	14.0 + 2.0	5
P	CU(65, 29)	CU(64, 29)	82.0	108.4 + 4.2	28
P	CU(65, 29)	CU(64, 29)	90.0	126.0 + 32.0	18
P	CU(65, 29)	CU(64, 29)	110.0	93.6 + 3.7	28
P	CU(65, 29)	CU(64, 29)	134.0	74.6 + 2.9	28
P	CU(65, 29)	CU(64, 29)	168.0	65.8 + 2.6	28
P	CU(65, 29)	CU(64, 29)	190.0	77.0 + 20.0	18
P	CU(65, 29)	CU(64, 29)	196.0	64.3 + 2.5	28
P	CU(65, 29)	CU(64, 29)	225.0	57.2 + 2.3	28
P	CU(65, 29)	CU(64, 29)	250.0		28
P	CU(65, 29)	CU(64, 29)	280.0	69.0	8
P	CU(65, 29)	CU(64, 29)	330.0	55.9 + 2.2	28
P	CU(65, 29)	CU(64, 29)	370.0	58.6 + 3.3	26
P	CU(65, 29)	CU(64, 29)	380.0	68.0 + 6.8	8
P	CU(65, 29)	CU(64, 29)	380.0	83.0 + 8.3	8
P	CU(65, 29)	CU(64, 29)	400.0	67.0 + 6.7	8
P	CU(65, 29)	CU(64, 29)	400.0	73.0 + 7.3	8
P	CU(65, 29)	CU(64, 29)	400.0	71.0	28
P	CU(65, 29)	CU(64, 29)	426.0	51.6 + 2.0	28
P	CU(65, 29)	NI(65, 28)	100.0	0.006	8
P	CU(65, 29)	NI(65, 28)	200.0	0.009	8
P	CU(65, 29)	NI(65, 28)	250.0	0.021	8
P	CU(65, 29)	NI(65, 28)	300.0	0.032	8
P	CU(65, 29)	NI(65, 28)	350.0	0.056	8
P	CU(65, 29)	NI(65, 28)	400.0	0.078	8
P	CU(65, 29)	NI(57, 28)	100.0	1.3	8
P	CU(65, 29)	NI(57, 28)	200.0	1.9	8
P	CU(65, 29)	NI(57, 28)	200.0	1.8	8
P	CU(65, 29)	NI(57, 28)	250.0	1.4	8
P	CU(65, 29)	NI(57, 28)	250.0	1.5	8
P	CU(65, 29)	NI(57, 28)	300.0	1.5	8
P	CU(65, 29)	NI(57, 28)	300.0	1.3	8
P	CU(65, 29)	NI(57, 28)	350.0	1.4	8
P	CU(65, 29)	NI(57, 28)	400.0	1.4	8
P	CU(65, 29)	NI(57, 28)	400.0	1.4	8
P	ZN(, 30)	GA(67, 31)	340.0	1.72	29
P	ZN(, 30)	GA(66, 31)	340.0	0.77	29
P	ZN(, 30)	ZN(65, 30)	340.0	104.0	29
P	ZN(, 30)	ZN(62, 30)	340.0	8.3	29
P	ZN(, 30)	CU(67, 29)	340.0	5.4	29
P	ZN(, 30)	CU(64, 29)	340.0	26.0	29
P	ZN(, 30)	CU(61, 29)	340.0	38.0	29
P	ZN(, 30)	NI(66, 28)	340.0	0.22	29
P	ZN(, 30)	NI(65, 28)	340.0	0.47	29
P	ZN(, 30)	NI(57, 28)	340.0	1.95	29

INC. PART	TARGET NUCLEUS	RESIDUAL NUCLEUS	ENERGY (MEV)	SIGMA (MB) EXPERIMENT	REF
P	ZN(, 30)	NI(56, 28)	340.0	0.103	29
P	ZN(, 30)	CO(61, 27)	340.0	1.84	29
P	ZN(, 30)	CO(58, 27)	340.0	53.0	29
P	ZN(, 30)	CO(56, 27)	340.0	2.07	29
P	ZN(, 30)	CO(55, 27)	340.0	1.72	29
P	ZN(, 30)	FE(59, 26)	340.0	0.77	29
P	ZN(, 30)	FE(52, 26)	340.0	0.25	29
P	ZN(, 30)	MN(56, 25)	340.0	2.2	29
P	ZN(, 30)	MN(54, 25)	340.0	21.8	29
P	ZN(, 30)	MN(52, 25)	340.0	11.5	29
P	ZN(, 30)	MN(51, 25)	340.0	2.3	29
P	ZN(, 30)	CR(51, 24)	340.0	17.2	29
P	ZN(, 30)	CR(49, 24)	340.0	2.3	29
P	ZN(, 30)	CR(48, 24)	340.0	0.23	29
P	ZN(, 30)	V(48, 23)	340.0	5.5	29
P	ZN(, 30)	V(47, 23)	340.0	0.92	29
P	ZN(, 30)	TI(45, 22)	340.0	1.06	29
P	ZN(, 30)	CA(47, 20)	340.0	0.0063	29
P	ZN(, 30)	CA(45, 20)	340.0	0.25	29
P	ZN(, 30)	K(43, 19)	340.0	0.22	29
P	ZN(, 30)	K(42, 19)	340.0	0.27	29
P	ZN(, 30)	S(35, 16)	340.0	0.07	29
P	ZN(, 30)	P(32, 15)	340.0	0.023	29
P	ZN(, 30)	NA(24, 11)	340.0	0.026	29
P	ZN(64, 30)	ZN(63, 30)	400.0	71.0	29
P	ZN(64, 30)	ZN(63, 30)	400.0	66.0	29
P	ZN(68, 30)	CU(67, 29)	80.0	11.8 + 1.5	30
P	ZN(68, 30)	CU(67, 29)	130.0	18.1 + 0.8	30
P	ZN(68, 30)	CU(67, 29)	210.0	14.6 + 3.3	30
P	ZN(68, 30)	CU(67, 29)	250.0	20.2 + 4.7	30
P	ZN(68, 30)	CU(67, 29)	300.0	21.3 + 2.1	30
P	ZN(68, 30)	CU(67, 29)	350.0	25.8 + 1.7	30
P	ZN(68, 30)	CU(67, 29)	400.0	20.8 + 5.8	30
P	GA(69, 31)	GA(69, 32)	56.0	20.0	31
P	GA(69, 31)	GE(68, 32)	56.0	34.0	31
P	GA(69, 31)	GE(67, 32)	56.0	21.0	31
P	GA(69, 31)	GE(66, 32)	56.0	5.8	31
P	GA(69, 31)	GA(68, 31)	56.0	190.0	31
P	GA(69, 31)	GA(68, 31)	370.0	58.4 + 2.6	26
P	GA(69, 31)	GA(67, 31)	56.0	170.0	31
P	GA(69, 31)	GA(66, 31)	56.0	185.0	31
P	GA(69, 31)	GA(66, 31)	370.0	18.2 + 1.1	26
P	GA(69, 31)	GA(65, 31)	56.0	32.0	31
P	GA(69, 31)	GA(65, 31)	370.0	4.5 + 1.5	26
P	GA(69, 31)	ZN(65, 30)	56.0	124.0	31
P	GA(69, 31)	ZN(63, 30)	56.0	29.0	31
P	GA(69, 31)	ZN(62, 30)	56.0	0.64	31
P	GA(69, 31)	CU(67, 29)	56.0	0.34	31
P	GA(69, 31)	CU(64, 29)	56.0	21.0	31
P	GA(71, 31)	GE(69, 32)	56.0	106.0	31
P	GA(71, 31)	GE(68, 32)	56.0	72.0	31
P	GA(71, 31)	GE(67, 32)	56.0	8.0	31
P	GA(71, 31)	GE(66, 32)	56.0	0.2	31
P	GA(71, 31)	GA(70, 31)	56.0	190.0	31
P	GA(71, 31)	GA(70, 31)	370.0	58.2 + 4.3	26

INC. PART	TARGET NUCLEUS	RESIDUAL NUCLEUS	ENERGY (MEV)	SIGMA (MB) EXPERIMENT	REF
P	GA(71, 31)	GA(68, 31)	56.0	230.0	31
P	GA(71, 31)	GA(68, 31)	370.0	37.8 + 2.4	26
P	GA(71, 31)	GA(67, 31)	56.0	86.0	31
P	GA(71, 31)	GA(66, 31)	56.0	3.0	31
P	GA(71, 31)	GA(66, 31)	370.0	10.0 + 0.7	26
P	GA(71, 31)	ZN(69, 30)	56.0	10.0	31
P	GA(71, 31)	ZN(69, 30)	56.0	7.6	31
P	GA(71, 31)	ZN(65, 30)	56.0	70.0	31
P	GA(71, 31)	CU(67, 29)	56.0	2.1	31
P	GA(71, 31)	CU(64, 29)	56.0	14.0	31
P	AS(75, 33)	SE(75, 34)	378.0	5.8 + 0.8	29
P	AS(75, 33)	SE(73, 34)	103.0	11.0 + 3.0	29
P	AS(75, 33)	SE(73, 34)	170.0	8.4 + 1.9	29
P	AS(75, 33)	SE(73, 34)	378.0	4.7 + 0.4	29
P	AS(75, 33)	SE(72, 34)	103.0	13.0 + 5.0	29
P	AS(75, 33)	SE(72, 34)	170.0	10.0 + 4.0	29
P	AS(75, 33)	SE(72, 34)	378.0	5.7 + 0.4	29
P	AS(75, 33)	SE(70, 34)	378.0	0.5 + 0.1	29
P	AS(75, 33)	AS(74, 33)	103.0	70.0 + 25.0	29
P	AS(75, 33)	AS(74, 33)	170.0	90.0 + 30.0	29
P	AS(75, 33)	AS(74, 33)	378.0	55.0 + 9.0	29
P	AS(75, 33)	AS(73, 33)	378.0	28.0 + 2.3	29
P	AS(75, 33)	AS(72, 33)	103.0	41.0 + 10.0	29
P	AS(75, 33)	AS(72, 33)	170.0	58.0 + 20.0	29
P	AS(75, 33)	AS(72, 33)	378.0	67.2 + 4.2	29
P	AS(75, 33)	AS(71, 33)	103.0	55.0 + 25.0	29
P	AS(75, 33)	AS(71, 33)	378.0	23.7 + 2.1	29
P	AS(75, 33)	AS(70, 33)	170.0	7.4 + 1.9	29
P	AS(75, 33)	GE(71, 32)	103.0	12.0 + 7.0	29
P	AS(75, 33)	GE(71, 32)	170.0	70.0 + 40.0	29
P	AS(75, 33)	GE(71, 32)	378.0	42.8 + 6.0	29
P	AS(75, 33)	GE(69, 32)	103.0	11.0 + 4.0	29
P	AS(75, 33)	GE(69, 32)	170.0	50.0 + 20.0	29
P	AS(75, 33)	GE(69, 32)	378.0	37.4 + 4.0	29
P	AS(75, 33)	GE(68, 32)	103.0	4.1 + 1.2	29
P	AS(75, 33)	GE(68, 32)	170.0	25.0 + 5.0	29
P	AS(75, 33)	GE(68, 32)	378.0	16.8 + 0.8	29
P	AS(75, 33)	GE(67, 32)	103.0	.58 + 0.17	29
P	AS(75, 33)	GE(67, 32)	170.0	3.0 + 0.9	29
P	AS(75, 33)	GA(73, 31)	103.0	.22 + 0.06	29
P	AS(75, 33)	GA(73, 31)	130.0	0.303 + 0.087	25
P	AS(75, 33)	GA(73, 31)	170.0	0.43 + 0.09	29
P	AS(75, 33)	GA(73, 31)	210.0	0.394 + 0.050	25
P	AS(75, 33)	GA(73, 31)	300.0	0.516 + 0.038	25
P	AS(75, 33)	GA(73, 31)	378.0	1.22 + 0.03	29
P	AS(75, 33)	GA(73, 31)	400.0	0.582 + 0.096	25
P	AS(75, 33)	GA(72, 31)	103.0	.80 + 0.25	29
P	AS(75, 33)	GA(72, 31)	170.0	1.3 + 0.3	29
P	AS(75, 33)	GA(72, 31)	378.0	2.46 + 0.07	29
P	AS(75, 33)	GA(70, 31)	103.0	5.7 + 1.5	29
P	AS(75, 33)	GA(70, 31)	170.0	16.0 + 3.0	29
P	AS(75, 33)	GA(70, 31)	378.0	20.4 + 2.0	29
P	AS(75, 33)	GA(68, 31)	103.0	17.0 + 4.0	29
P	AS(75, 33)	GA(68, 31)	170.0	29.0 + 6.0	29
P	AS(75, 33)	GA(68, 31)	378.0	22.8 + 1.5	29

INC. PART	TARGET NUCLEUS	RESIDUAL NUCLEUS	ENERGY (MEV)	SIGMA (MB) EXPERIMENT	REF
P	AS(75, 33)	GA(67, 31)	103.0	25.0 + 7.0	29
P	AS(75, 33)	GA(67, 31)	170.0	52.0 + 13.0	29
P	AS(75, 33)	GA(67, 31)	378.0	29.6 + 0.8	29
P	AS(75, 33)	GA(66, 31)	103.0	6.3 + 1.7	29
P	AS(75, 33)	GA(66, 31)	170.0	16.0 + 3.0	29
P	AS(75, 33)	GA(66, 31)	378.0	12.1 + 0.3	29
P	AS(75, 33)	ZN(72, 30)	130.0	(2.60 + 1.74)E-3	25
P	AS(75, 33)	ZN(72, 30)	210.0	(7.85 + 1.73)E-3	25
P	AS(75, 33)	ZN(72, 30)	300.0	(8.53 + 1.72)E-3	25
P	AS(75, 33)	ZN(72, 30)	378.0	0.0036 + 0.0028	29
P	AS(75, 33)	ZN(72, 30)	400.0	0.00330	25
P	AS(75, 33)	ZN(69, 30)	103.0	.34 + 0.08	29
P	AS(75, 33)	ZN(69, 30)	103.0	.25 + 0.07	29
P	AS(75, 33)	ZN(69, 30)	170.0	1.1 + 0.2	29
P	AS(75, 33)	ZN(69, 30)	170.0	1.3 + 0.2	29
P	AS(75, 33)	ZN(69, 30)	378.0	1.69 + 0.05	29
P	AS(75, 33)	ZN(65, 30)	103.0	6.6 + 2.5	29
P	AS(75, 33)	ZN(65, 30)	378.0	30.4 + 6.9	29
P	AS(75, 33)	ZN(62, 30)	378.0	1.08 + 0.08	29
P	AS(75, 33)	CU(67, 29)	103.0	.22 + 0.06	29
P	AS(75, 33)	CU(67, 29)	170.0	0.55 + 0.10	29
P	AS(75, 33)	CU(67, 29)	378.0	0.79 + 0.11	29
P	AS(75, 33)	CU(66, 29)	378.0	5.2 + 1.0	29
P	AS(75, 33)	CU(64, 29)	103.0	2.3 + 0.6	29
P	AS(75, 33)	CU(64, 29)	170.0	7.2 + 1.2	29
P	AS(75, 33)	CU(64, 29)	378.0	13.7 + 1.9	29
P	AS(75, 33)	CU(62, 29)	378.0	18.3 + 1.3	29
P	AS(75, 33)	CU(61, 29)	103.0	0.14 + 0.05	29
P	AS(75, 33)	CU(61, 29)	170.0	1.5 + 0.3	29
P	AS(75, 33)	CU(61, 29)	378.0	8.1 + 0.7	29
P	AS(75, 33)	CU(60, 29)	170.0	0.34 + 0.18	29
P	AS(75, 33)	CU(60, 29)	378.0	1.42 + 0.07	29
P	AS(75, 33)	NI(66, 28)	103.0	0.0037 + .0011	29
P	AS(75, 33)	NI(66, 28)	170.0	0.024 + 0.005	29
P	AS(75, 33)	NI(66, 28)	378.0	0.051 + 0.005	29
P	AS(75, 33)	NI(65, 28)	103.0	0.019 + 0.005	29
P	AS(75, 33)	NI(65, 28)	170.0	0.13 + 0.03	29
P	AS(75, 33)	NI(65, 28)	378.0	0.57 + 0.05	29
P	AS(75, 33)	NI(57, 28)	378.0	0.16 + 0.02	29
P	AS(75, 33)	NI(56, 28)	378.0	0.0007 + 0.0034	29
P	AS(75, 33)	CO(61, 27)	103.0	0.074 + 0.020	29
P	AS(75, 33)	CO(61, 27)	170.0	0.59 + 0.10	29
P	AS(75, 33)	CO(61, 27)	378.0	4.1 + 1.0	29
P	AS(75, 33)	CO(58, 27)	378.0	5.0 + 1.2	29
P	AS(75, 33)	CO(57, 27)	378.0	7.2 + 1.0	29
P	AS(75, 33)	CO(56, 27)	378.0	2.16 + 0.51	29
P	AS(75, 33)	CO(55, 27)	378.0	0.44 + 0.10	29
P	AS(75, 33)	FE(59, 26)	170.0	0.10 + 0.02	29
P	AS(75, 33)	FE(59, 26)	378.0	0.44 + 0.04	29
P	AS(75, 33)	FE(55, 26)	378.0	3.53 + 0.38	29
P	AS(75, 33)	FE(53, 26)	378.0	0.155 + 0.027	29
P	AS(75, 33)	FE(52, 26)	378.0	0.0080 + 0.0004	29
P	AS(75, 33)	MN(56, 25)	170.0	0.12 + 0.04	29
P	AS(75, 33)	MN(56, 25)	378.0	1.15 + 0.04	29
P	AS(75, 33)	MN(54, 25)	378.0	5.05 + 0.26	29

INC. PART	TARGET NUCLEUS	RESIDUAL NUCLEUS	ENERGY (MEV)	SIGMA (MB) EXPERIMENT	REF
P	AS(75, 33)	MN(52, 25)	378.0	0.704 + 0.040	29
P	AS(75, 33)	MN(52, 25)	378.0	0.24 + 0.03	29
P	AS(75, 33)	MN(51, 25)	378.0	0.064 + 0.012	29
P	AS(75, 33)	CR(51, 24)	378.0	1.0 + 0.2	29
P	AS(75, 33)	CR(49, 24)	378.0	0.22 +0.06	29
P	AS(75, 33)	CR(48, 24)	378.0	0.010 + 0.004	29
P	AS(75, 33)	V(53, 23)	378.0	(0.009)	29
P	AS(75, 33)	V(49, 23)	378.0	1.5 + 0.7	29
P	AS(75, 33)	V(48, 23)	378.0	0.26 + 0.04	29
P	AS(75, 33)	V(47, 23)	378.0	0.17 + 0.09	29
P	AS(75, 33)	TI(51, 22)	378.0	(0.4)	29
P	AS(75, 33)	TI(45, 22)	378.0	0.047 + 0.008	29
P	AS(75, 33)	SC(49, 21)	378.0	(1.5)	29
P	AS(75, 33)	SC(48, 21)	378.0	0.007 + 0.005	29
P	AS(75, 33)	SC(47, 21)	378.0	0.092 + 0.014	29
P	AS(75, 33)	SC(46, 21)	378.0	0.157 + 0.003	29
P	AS(75, 33)	SC(44, 21)	378.0	0.146 + 0.020	29
P	AS(75, 33)	SC(, 21)	378.0	0.151 + 0.020	29
P	AS(75, 33)	CA(47, 20)	378.0	0.0022 + 0.004	29
P	AS(75, 33)	CA(45, 20)	378.0	0.0022 + 0.004	29
P	AS(75, 33)	K(43, 19)	378.0	0.031 + 0.003	29
P	AS(75, 33)	K(42, 19)	378.0	0.057 + 0.006	29
P	KR(84, 36)	LI(8, 3)	340.0	5.5 + 2.0	29
P	SR(88, 38)	Y(88, 39)	68.0	36.0 + 3.0	5
P	SR(88, 38)	Y(88, 39)	110.0	17.0 + 2.0	5
P	SR(88, 38)	Y(88, 39)	143.0	17.5 + 2.0	5
P	Y(89, 39)	Y(88, 39)	22.0	36.0 + 25.0	18
P	Y(89, 39)	Y(88, 39)	27.0	220.0 + 35.0	18
P	Y(89, 39)	Y(88, 39)	31.0	139.0 + 30.0	18
P	Y(89, 39)	Y(88, 39)	36.0	172.0 + 33.0	18
P	Y(89, 39)	Y(88, 39)	48.5	202.0 + 35.0	18
P	Y(89, 39)	Y(88, 39)	61.0	201.0 + 35.0	18
P	Y(89, 39)	Y(88, 39)	71.0	148.0 + 30.0	18
P	Y(89, 39)	Y(88, 39)	74.0	124.0 + 25.0	18
P	Y(89, 39)	Y(88, 39)	87.0	126.0 + 25.0	18
P	Y(89, 39)	Y(88, 39)	103.0	143.0 + 20.0	18
P	Y(89, 39)	Y(88, 39)	117.0	119.0 + 18.0	18
P	Y(89, 39)	Y(88, 39)	134.0	109.0 + 18.0	18
P	Y(89, 39)	Y(88, 39)	152.0	120.0 + 20.0	18
P	Y(89, 39)	Y(, 39)	240.0	2.0 + .5	29
P	Y(89, 39)	SR(85, 38)	240.0	53.0 + 9.0	29
P	Y(89, 39)	RB(, 37)	240.0	33.1 + 13.0	29
P	Y(89, 39)	KR(79, 36)	240.0	21.0	29
P	Y(89, 39)	KR(77, 36)	240.0	10.1	29
P	Y(89, 39)	KR(76, 36)	240.0	3.1	29
P	Y(89, 39)	SE(75, 34)	240.0	0.85 + 0.2	29
P	Y(89, 39)	SE(73, 34)	240.0	3.1 + 0.9	29
P	Y(89, 39)	AS(71, 33)	240.0	1.3 + 0.5	29
P	Y(89, 39)	GE(77, 32)	240.0	.006 + .005	29
P	Y(89, 39)	GE(71, 32)	240.0	1.9 + 0.9	29
P	Y(89, 39)	GE(69, 32)	240.0	0.014 + 0.01	29
P	Y(89, 39)	GE(68, 32)	240.0	0.019 + 0.01	29
P	ZR(90, 40)	Y(83, 39)	60.0	0.0021	32
P	ZR(90, 40)	Y(83, 39)	100.0	0.0085	32
P	ZR(90, 40)	Y(83, 39)	100.0	0.0096	32

INC. PART	TARGET NUCLEUS	RESIDUAL NUCLEUS	ENERGY (MEV)	SIGMA (MB) EXPERIMENT	REF
P	ZR(90, 40)	Y(83, 39)	150.0	0.0056	32
P	ZR(90, 40)	Y(83, 39)	150.0	0.0076	32
P	ZR(90, 40)	Y(83, 39)	240.0	0.0085	32
P	ZR(90, 40)	Y(83, 39)	240.0	0.0070	32
P	ZR(90, 40)	SR(83, 38)	60.0	0.032	32
P	ZR(90, 40)	SR(83, 38)	100.0	11.8	32
P	ZR(90, 40)	SR(83, 38)	100.0	12.2	32
P	ZR(90, 40)	SR(83, 38)	150.0	9.9	32
P	ZR(90, 40)	SR(83, 38)	150.0	12.6	32
P	ZR(90, 40)	SR(83, 38)	240.0	18.2	32
P	ZR(90, 40)	SR(83, 38)	240.0	15.6	32
P	NB(93, 41)	NB(90, 41)	240.0	65.6	33
P	NB(93, 41)	NB(90, 41)	320.0	54.8	33
P	NB(93, 41)	NB(89, 41)	240.0	25.0	33
P	NB(93, 41)	NB(89, 41)	320.0	21.7	33
P	NB(93, 41)	ZR(89, 40)	240.0	62.7	33
P	NB(93, 41)	ZR(89, 40)	320.0	59.7	33
P	NB(93, 41)	ZR(88, 40)	240.0	80.9	33
P	NB(93, 41)	ZR(88, 40)	320.0	71.7	33
P	NB(93, 41)	ZR(87, 40)	240.0	46.7	33
P	NB(93, 41)	ZR(87, 40)	320.0	42.4	33
P	NB(93, 41)	Y(88, 39)	37.0	3.3 + 1.5	34
P	NB(93, 41)	Y(88, 39)	52.0	10.7 + 2.2	34
P	NB(93, 41)	Y(88, 39)	87.5	13.0 + 2.5	34
P	NB(93, 41)	CU(67, 29)	240.0	0.00146	33
P	NB(93, 41)	CU(67, 29)	320.0	0.00520	33
P	NB(93, 41)	CU(64, 29)	240.0	0.0209	33
P	NB(93, 41)	CU(64, 29)	320.0	0.103	33
P	NB(93, 41)	CU(61, 29)	240.0	0.00518	33
P	NB(93, 41)	CU(61, 29)	320.0	0.0342	33
P	NB(93, 41)	NI(66, 28)	240.0	0.000103	33
P	NB(93, 41)	NI(66, 28)	320.0	0.000380	33
P	NB(93, 41)	NI(65, 28)	240.0	0.000550	33
P	NB(93, 41)	NI(65, 28)	320.0	0.00315	33
P	NB(93, 41)	NI(57, 28)	240.0	0.000349	33
P	NB(93, 41)	NI(57, 28)	320.0	0.00177	33
P	NB(93, 41)	NA(24, 11)	240.0	0.00821	33
P	NB(93, 41)	NA(24, 11)	320.0	0.0148	33
P	NB(93, 41)	NA(22, 11)	240.0	0.0192	33
P	NB(93, 41)	NA(22, 11)	320.0	0.0159	33
P	MO(100, 42)	MO(99, 42)	380.0	65.0	29
P	MO(100, 42)	MO(99, 42)	400.0	79.0	29
P	MO(100, 42)	MO(99, 42)	400.0	73.0	29
P	RH(103, 45)	RU(100, 44)	56.0	159.0 + 5.0	35
P	AG(, 47)	CD(109, 48)	340.0	3.4	29
P	AG(, 47)	CD(107, 48)	340.0	8.2	29
P	AG(, 47)	CD(105, 48)	340.0	3.0	29
P	AG(, 47)	AG(106, 47)	340.0	130.0	29
P	AG(, 47)	AG(105, 47)	340.0	150.0	29
P	AG(, 47)	PD(103, 46)	340.0	85.0	29
P	AG(, 47)	PD(99, 46)	340.0	42.0	29
P	AG(, 47)	RH(101, 45)	340.0	82.0	29
P	AG(, 47)	RH(100, 45)	340.0	62.0	29
P	AG(, 47)	RH(99, 45)	340.0	36.0	29
P	AG(, 47)	RU(103, 44)	340.0	0.24	29

INC. PART	TARGET NUCLEUS	RESIDUAL NUCLEUS	ENERGY (MEV)	SIGMA (MB) EXPERIMENT	REF
P	AG(, 47)	RU(97, 44)	340.0	33.0	29
P	AG(, 47)	RU(95, 44)	340.0	22.0	29
P	AG(, 47)	MO(99, 42)	340.0	0.07	29
P	AG(, 47)	MO(90, 42)	340.0	19.0	29
P	AG(, 47)	NB(92, 41)	340.0	7.3	29
P	AG(, 47)	NB(90, 41)	340.0	7.9	29
P	AG(, 47)	ZR(89, 40)	340.0	5.6	29
P	AG(, 47)	ZR(87, 40)	340.0	7.9	29
P	AG(, 47)	ZR(86, 40)	340.0	2.5	29
P	AG(, 47)	Y(91, 39)	340.0	0.08	29
P	AG(, 47)	Y(88, 39)	340.0	2.6	29
P	AG(, 47)	Y(87, 39)	340.0	1.8	29
P	AG(, 47)	Y(87, 39)	340.0	1.3	29
P	AG(, 47)	SR(85, 38)	340.0	0.8	29
P	AG(, 47)	SR(82, 38)	340.0	0.5	29
P	AG(, 47)	SR(81, 38)	340.0	0.11	29
P	AG(, 47)	RB(86, 37)	340.0	0.02	29
P	AG(, 47)	RB(84, 37)	340.0	0.34	29
P	AG(, 47)	RB(83, 37)	340.0	1.0	29
P	AG(, 47)	RB(82, 37)	340.0	1.3	29
P	AG(, 47)	RB(81, 37)	340.0	0.9	29
P	AG(, 47)	BR(82, 35)	340.0	0.0068	29
P	AG(, 47)	BR(80, 35)	340.0	0.011	29
P	AG(, 47)	BR(77, 35)	340.0	0.033	29
P	AG(, 47)	BR(76, 35)	340.0	0.070	29
P	AG(, 47)	BR(75, 35)	340.0	0.034	29
P	AG(, 47)	SE(73, 34)	340.0	0.055	29
P	AG(, 47)	SE(72, 34)	340.0	0.028	29
P	AG(, 47)	AS(76, 33)	340.0	0.0022	29
P	AG(, 47)	AS(74, 33)	340.0	0.015	29
P	AG(, 47)	AS(72, 33)	340.0	0.040	29
P	AG(, 47)	AS(71, 33)	340.0	0.034	29
P	AG(, 47)	AS(70, 33)	340.0	0.0062	29
P	AG(, 47)	GE(69, 32)	340.0	0.020	29
P	AG(, 47)	GA(72, 31)	340.0	0.0011	29
P	AG(, 47)	GA(68, 31)	340.0	0.011	29
P	AG(, 47)	GA(66, 31)	340.0	0.0050	29
P	AG(, 47)	ZN(63, 30)	340.0	0.0017	29
P	AG(, 47)	ZN(62, 30)	340.0	0.0011	29
P	AG(, 47)	CU(67, 29)	340.0	0.00038	29
P	AG(, 47)	CU(64, 29)	340.0	0.0045	29
P	AG(, 47)	CU(61, 29)	340.0	0.0015	29
P	AG(, 47)	NI(65, 28)	340.0	0.00015	29
P	AG(, 47)	CO(61, 27)	340.0	0.0011	29
P	AG(, 47)	MN(56, 25)	340.0	0.0013	29
P	AG(, 47)	CL(39, 17)	340.0	0.00040	29
P	AG(, 47)	CL(38, 17)	340.0	0.0013	29
P	AG(, 47)	MG(28, 12)	340.0	0.0012	29
P	AG(, 47)	NA(24, 11)	340.0	0.010	29
P	AG(, 47)	F(18, 9)	340.0	0.0073	29
P	AG(, 47)	C(11, 6)	340.0	0.013	29
P	AG(, 47)	BE(7, 4)	340.0	0.1	29
P	IN(115, 49)	CD(115, 48)	130.0	0.065 + 0.012	36
P	IN(115, 49)	CD(115, 48)	130.0	0.031	36
P	IN(115, 49)	CD(115, 48)	200.0	0.068 + 0.004	36

INC. PART	TARGET NUCLEUS	RESIDUAL NUCLEUS	ENERGY (MEV)	SIGMA (MB) EXPERIMENT	REF
P	IN(115, 49)	CD(115, 48)	200.0	0.029 + 0.002	36
P	IN(115, 49)	CD(115, 48)	300.0	0.113 + 0.018	36
P	IN(115, 49)	CD(115, 48)	300.0	0.046 + 0.009	36
P	IN(115, 49)	CD(115, 48)	400.0	0.139 + 0.037	36
P	IN(115, 49)	CD(115, 48)	400.0	0.055 + 0.009	36
P	SN(, 50)	I(126, 53)	170.0	0.009	29
P	SN(, 50)	I(126, 53)	340.0	0.02	29
P	SN(, 50)	I(126, 53)	350.0	0.006	29
P	SN(, 50)	I(124, 53)	170.0	0.009	29
P	SN(, 50)	I(124, 53)	340.0	0.28	29
P	SN(, 50)	I(124, 53)	350.0	0.004	29
P	SN(, 50)	I(123, 53)	170.0	0.098 + 0.07	29
P	SN(, 50)	I(123, 53)	340.0	0.3 + 0.08	29
P	SN(, 50)	I(123, 53)	350.0	0.007	29
P	SN(, 50)	I(121, 53)	170.0	0.017 + 0.004	29
P	SN(, 50)	I(121, 53)	340.0	0.077 + 0.0034	29
P	SN(, 50)	I(121, 53)	350.0	0.001	29
P	SN(, 50)	I(120, 53)	170.0	0.01 + 0.009	29
P	SN(, 50)	I(120, 53)	340.0	0.03 + 0.009	29
P	SN(, 50)	I(120, 53)	350.0	0.005	29
P	SN(, 50)	TE(118, 52)	170.0	3.2 + 0.9	29
P	SN(, 50)	TE(118, 52)	340.0	18.9 + 1.7	29
P	SN(, 50)	H(3, 1)	300.0	38.0 + 11.0	29
P	TE(130, 52)	TE(129, 52)	60.0	59.0 + 4.0	37
P	TE(130, 52)	TE(129, 52)	60.0	66.0 + 2.0	37
P	TE(130, 52)	TE(129, 52)	60.0	125.0 + 4.0	37
P	TE(130, 52)	TE(129, 52)	120.0	55.0 + 4.0	37
P	TE(130, 52)	TE(129, 52)	120.0	70.0 + 5.0	37
P	TE(130, 52)	TE(129, 52)	120.0	126.0 + 6.0	37
P	TE(130, 52)	TE(129, 52)	180.0	33.0 + 3.0	37
P	TE(130, 52)	TE(129, 52)	180.0	43.0 + 2.0	37
P	TE(130, 52)	TE(129, 52)	180.0	76.0 + 4.0	37
P	TE(130, 52)	TE(129, 52)	233.0	34.0 + 2.0	37
P	TE(130, 52)	TE(129, 52)	233.0	41.0 + 1.0	37
P	TE(130, 52)	TE(129, 52)	233.0	75.0 + 2.0	37
P	TE(130, 52)	SB(129, 51)	60.0	9.9 + 0.5	37
P	TE(130, 52)	SB(129, 51)	120.0	7.2 + 0.4	37
P	TE(130, 52)	SB(129, 51)	180.0	12.3 + 0.6	37
P	TE(130, 52)	SB(129, 51)	233.0	15.8 + 1.6	37
P	I(127, 53)	CS(127, 55)	250.0	(0.004)	29
P	I(127, 53)	I(126, 53)	100.0	126.0 + 26.0	29
P	I(127, 53)	I(126, 53)	170.0	64.0 + 9.0	29
P	I(127, 53)	I(126, 53)	250.0	80.6	29
P	I(127, 53)	I(126, 53)	300.0	53.0 + 8.0	29
P	I(127, 53)	I(125, 53)	100.0	100.0 + 26.0	29
P	I(127, 53)	I(125, 53)	170.0	44.0 + 9.0	29
P	I(127, 53)	I(125, 53)	250.0	49.5	29
P	I(127, 53)	I(125, 53)	300.0	37.0 + 7.0	29
P	I(127, 53)	I(124, 53)	100.0	50.0 + 7.0	29
P	I(127, 53)	I(124, 53)	170.0	54.0 + 12.0	29
P	I(127, 53)	I(124, 53)	250.0	50.4	29
P	I(127, 53)	I(124, 53)	300.0	28.0 + 10.0	29
P	I(127, 53)	I(123, 53)	100.0	44.0 + 11.0	29
P	I(127, 53)	I(123, 53)	170.0	13.5 + 2.4	29
P	I(127, 53)	I(123, 53)	250.0	51.3	29

INC. PART	TARGET NUCLEUS	RESIDUAL NUCLEUS	ENERGY (MEV)	SIGMA (MB) EXPERIMENT	REF
P	I(127, 53)	I(123, 53)	300.0	12.0 + 2.1	29
P	I(127, 53)	I(121, 53)	100.0	105.0 + 16.0	29
P	I(127, 53)	I(121, 53)	170.0	20.5 + 3.2	29
P	I(127, 53)	I(121, 53)	250.0	59.4	29
P	I(127, 53)	I(121, 53)	300.0	50.0 + 10.0	29
P	I(127, 53)	I(120, 53)	100.0	8.9 + 3.6	29
P	I(127, 53)	I(120, 53)	170.0	6.8 + 1.1	29
P	I(127, 53)	I(120, 53)	250.0	29.8	29
P	I(127, 53)	I(120, 53)	300.0	7.9 + 2.1	29
P	I(127, 53)	TE(127, 52)	250.0	(0.5 + 0.4)	29
P	I(127, 53)	TE(127, 52)	250.0	(1.5 + 0.5)	29
P	I(127, 53)	TE(118, 52)	250.0	64.5 + 6.6	29
P	I(127, 53)	TE(, 52)	250.0	40.2 + 7.8	29
P	I(127, 53)	SB(127, 51)	250.0	(0.07)	29
P	XE(, 54)	LI(8, 3)	340.0	2.6 + 0.8	29
P	CS(133, 55)	BA(133, 56)	60.0	31.0	29
P	CS(133, 55)	BA(131, 56)	60.0	20.0	29
P	CS(133, 55)	BA(131, 56)	80.0	4.8	29
P	CS(133, 55)	BA(131, 56)	100.0	13.0	29
P	CS(133, 55)	BA(131, 56)	150.0	3.0	29
P	CS(133, 55)	BA(131, 56)	240.0	5.3	29
P	CS(133, 55)	BA(129, 56)	60.0	173.0	29
P	CS(133, 55)	BA(129, 56)	80.0	3.1	29
P	CS(133, 55)	BA(129, 56)	100.0	4.7	29
P	CS(133, 55)	BA(129, 56)	150.0	11.0	29
P	CS(133, 55)	BA(129, 56)	240.0	3.6	29
P	CS(133, 55)	BA(128, 56)	80.0	67.0	29
P	CS(133, 55)	BA(128, 56)	100.0	58.0	29
P	CS(133, 55)	BA(128, 56)	150.0	14.0	29
P	CS(133, 55)	BA(128, 56)	240.0	8.1	29
P	CS(133, 55)	CS(132, 55)	25.0	164.0 + 23.0	38
P	CS(133, 55)	CS(132, 55)	26.0	165.0 + 25.0	18
P	CS(133, 55)	CS(132, 55)	40.0	238.0 + 34.0	38
P	CS(133, 55)	CS(132, 55)	40.0	240.0 + 35.0	18
P	CS(133, 55)	CS(132, 55)	49.0	214.0 + 30.0	18
P	CS(133, 55)	CS(132, 55)	50.0	213.0 + 30.0	38
P	CS(133, 55)	CS(132, 55)	59.0	259.0 + 38.0	18
P	CS(133, 55)	CS(132, 55)	60.0	257.0 + 38.0	38
P	CS(133, 55)	CS(132, 55)	60.0	790.0 + 395.0	18
P	CS(133, 55)	CS(132, 55)	69.0	222.0 + 35.0	18
P	CS(133, 55)	CS(132, 55)	70.0	219.0 + 33.0	38
P	CS(133, 55)	CS(132, 55)	77.0	216.0 + 32.0	18
P	CS(133, 55)	CS(132, 55)	78.0	212.0 + 28.0	38
P	CS(133, 55)	CS(132, 55)	80.0	1120.0 + 560.0	18
P	CS(133, 55)	CS(132, 55)	84.0	197.0 + 30.0	18
P	CS(133, 55)	CS(132, 55)	85.0	195.0 + 27.0	38
P	CS(133, 55)	CS(132, 55)	90.0	238.0 + 35.0	18
P	CS(133, 55)	CS(132, 55)	90.0	238.0 + 32.0	38
P	CS(133, 55)	CS(132, 55)	100.0	890.0 + 445.0	18
P	CS(133, 55)	CS(132, 55)	107.0	204.0 + 29.0	38
P	CS(133, 55)	CS(132, 55)	107.0	206.0 + 30.0	18
P	CS(133, 55)	CS(132, 55)	126.0	172.0 + 25.0	18
P	CS(133, 55)	CS(132, 55)	127.0	172.0 + 28.0	38
P	CS(133, 55)	CS(132, 55)	144.0	144.0 + 20.0	18
P	CS(133, 55)	CS(132, 55)	145.0	130.0 + 20.0	38

INC. PART	TARGET NUCLEUS	RESIDUAL NUCLEUS	ENERGY (MEV)	SIGMA (MB) EXPERIMENT	REF
P	CS(133, 55)	CS(132, 55)	150.0	570.0 + 285.0	18
P	CS(133, 55)	CS(132, 55)	152.0	138.0 + 20.0	18
P	CS(133, 55)	CS(132, 55)	155.0	127.0 + 18.0	38
P	CS(133, 55)	CS(132, 55)	240.0	59.0	29
P	CS(133, 55)	CS(131, 55)	50.0	166.0 + 34.0	38
P	CS(133, 55)	CS(131, 55)	60.0	163.0 + 32.0	38
P	CS(133, 55)	CS(131, 55)	60.0	470.0	29
P	CS(133, 55)	CS(131, 55)	70.0	150.0 + 30.0	38
P	CS(133, 55)	CS(131, 55)	78.0	168.0 + 32.0	38
P	CS(133, 55)	CS(131, 55)	85.0	138.0 + 27.0	38
P	CS(133, 55)	CS(131, 55)	90.0	183.0 + 35.0	38
P	CS(133, 55)	CS(131, 55)	100.0	500.0	29
P	CS(133, 55)	CS(131, 55)	107.0	163.0 + 32.0	38
P	CS(133, 55)	CS(131, 55)	127.0	148.0 + 30.0	38
P	CS(133, 55)	CS(131, 55)	145.0	93.0 + 17.0	38
P	CS(133, 55)	CS(131, 55)	150.0	320.0	29
P	CS(133, 55)	CS(131, 55)	155.0	40.0 + 10.0	38
P	CS(133, 55)	CS(131, 55)	240.0	460.0	29
P	CS(133, 55)	CS(130, 55)	60.0	137.0	29
P	CS(133, 55)	CS(130, 55)	80.0	46.0	29
P	CS(133, 55)	CS(130, 55)	150.0	12.0	29
P	CS(133, 55)	CS(129, 55)	60.0	83.0	29
P	CS(133, 55)	CS(129, 55)	80.0	123.0	29
P	CS(133, 55)	CS(129, 55)	100.0	116.0	29
P	CS(133, 55)	CS(129, 55)	150.0	36.0	29
P	CS(133, 55)	CS(129, 55)	240.0	15.0	29
P	CS(133, 55)	CS(127, 55)	80.0	7.1	29
P	CS(133, 55)	CS(127, 55)	100.0	15.4	29
P	CS(133, 55)	CS(127, 55)	150.0	6.4	29
P	CS(133, 55)	CS(127, 55)	240.0	4.5	29
P	CS(133, 55)	I(130, 53)	60.0	0.004	29
P	CS(133, 55)	I(130, 53)	80.0	0.02	29
P	CS(133, 55)	I(130, 53)	100.0	0.04	29
P	CS(133, 55)	I(128, 53)	60.0	0.36	29
P	CS(133, 55)	I(128, 53)	80.0	0.4	29
P	CS(133, 55)	I(128, 53)	100.0	0.44	29
P	CS(133, 55)	I(126, 53)	60.0	0.05	29
P	CS(133, 55)	I(126, 53)	80.0	0.94	29
P	CS(133, 55)	I(126, 53)	100.0	2.4	29
P	CS(133, 55)	I(126, 53)	150.0	2.5	29
P	CS(133, 55)	I(126, 53)	240.0	5.0	29
P	CS(133, 55)	I(124, 53)	150.0	5.7	29
P	CS(133, 55)	I(124, 53)	150.0	8.5	29
P	CS(133, 55)	I(124, 53)	240.0	8.4	29
P	CS(133, 55)	I(123, 53)	240.0	21.0	29
P	CS(133, 55)	I(, 53)	150.0	3.6	29
P	CS(133, 55)	I(, 53)	240.0	11.0	29
P	CS(133, 55)	TE(121, 52)	150.0	5.1	29
P	CS(133, 55)	TE(118, 52)	150.0	1.1	29
P	CS(133, 55)	TE(118, 52)	240.0	4.8	29
P	CS(133, 55)	TE(117, 52)	150.0	0.2	29
P	CS(133, 55)	TE(117, 52)	240.0	2.4	29
P	LA(139, 57)	CE(139, 58)	34.0	42.0 + 4.0	5
P	LA(139, 57)	CE(139, 58)	58.0	27.0 + 3.0	5
P	LA(139, 57)	CE(139, 58)	112.0	16.0 + 2.0	5

INC. PART	TARGET NUCLEUS	RESIDUAL NUCLEUS	ENERGY (MEV)	SIGMA (MB) EXPERIMENT	REF
P	LA(139, 57)	P(32, 15)	340.0	0.0073	29
P	LA(139, 57)	NA(24, 11)	340.0	0.005	29
P	LA(139, 57)	NA(24, 11)	2000.0	0.00099	29
P	LA(139, 57)	NA(24, 11)	2000.0	0.003	29
P	CE(142, 58)	CE(141, 58)	60.0	114.0 + 12.0	39
P	CE(142, 58)	CE(141, 58)	120.0	98.2 + 17.0	39
P	CE(142, 58)	CE(141, 58)	180.0	73.7 + 8.0	39
P	CE(142, 58)	CE(141, 58)	200.0	68.9 + 3.4	39
P	CE(142, 58)	CE(141, 58)	233.0	65.5 + 3.8	39
P	CE(142, 58)	CE(141, 58)	370.0	79.0 + 7.9	40
P	CE(142, 58)	CE(141, 58)	400.0	86.2 + 1.6	29
P	CE(142, 58)	CE(141, 58)	420.0	62.1 + 3.7	41
P	CE(142, 58)	LA(141, 57)	60.0	9.2 + 2.0	39
P	CE(142, 58)	LA(141, 57)	120.0	11.8 + 4.0	39
P	CE(142, 58)	LA(141, 57)	180.0	15.5 + 6.0	39
P	CE(142, 58)	LA(141, 57)	200.0	15.5 + 6.0	39
P	CE(142, 58)	LA(141, 57)	233.0	19.6 + 7.0	39
P	CE(142, 58)	LA(141, 57)	370.0	20.0 + 2.3	40
P	CE(142, 58)	LA(141, 57)	400.0	54.4 + 4.6	29
P	CE(142, 58)	LA(141, 57)	420.0	16.1 + 1.0	41
P	ER(, 68)	TM(167, 69)	22.0	680.0	42
P	ER(, 68)	TM(167, 69)	28.0	380.0	42
P	ER(, 68)	TM(167, 69)	34.0	430.0	42
P	ER(, 68)	TM(167, 69)	40.0	510.0	42
P	ER(, 68)	TM(167, 69)	47.0	160.0	42
P	ER(, 68)	TM(167, 69)	57.0	110.0	42
P	ER(, 68)	TM(167, 69)	67.0	94.0	42
P	ER(, 68)	TM(167, 69)	77.0	59.0	42
P	ER(, 68)	TM(167, 69)	87.0	48.0	42
P	ER(, 68)	TM(166, 69)	22.0	99.0	42
P	ER(, 68)	TM(166, 69)	28.0	98.0	42
P	ER(, 68)	TM(166, 69)	34.0	54.0	42
P	ER(, 68)	TM(166, 69)	40.0	36.0	42
P	ER(, 68)	TM(166, 69)	47.0	47.0	42
P	ER(, 68)	TM(166, 69)	57.0	21.0	42
P	ER(, 68)	TM(166, 69)	67.0	22.0	42
P	ER(, 68)	TM(166, 69)	77.0	13.0	42
P	ER(, 68)	TM(166, 69)	87.0	13.0	42
P	ER(, 68)	TM(165, 69)	22.0	1.2	42
P	ER(, 68)	TM(165, 69)	28.0	8.4	42
P	ER(, 68)	TM(165, 69)	34.0	8.0	42
P	ER(, 68)	TM(165, 69)	40.0	9.7	42
P	ER(, 68)	TM(165, 69)	47.0	6.0	42
P	ER(, 68)	TM(165, 69)	57.0	3.3	42
P	ER(, 68)	TM(163, 69)	34.0	1.6	42
P	ER(, 68)	TM(163, 69)	40.0	23.0	42
P	ER(, 68)	TM(163, 69)	47.0	29.0	42
P	ER(, 68)	TM(163, 69)	57.0	41.0	42
P	ER(, 68)	TM(163, 69)	67.0	34.0	42
P	ER(, 68)	TM(163, 69)	77.0	17.0	42
P	ER(, 68)	TM(163, 69)	87.0	0.4	42
P	ER(, 68)	ER(165, 68)	22.0	1.5	42
P	ER(, 68)	ER(165, 68)	34.0	50.0	42
P	ER(, 68)	ER(165, 68)	40.0	41.0	42
P	ER(, 68)	ER(165, 68)	47.0	120.0	42

INC. PART	TARGET NUCLEUS	RESIDUAL NUCLEUS	ENERGY (MEV)	SIGMA (MB) EXPERIMENT	REF
P	ER(, 68)	ER(165, 68)	57.0	190.0	42
P	ER(, 68)	ER(165, 68)	67.0	390.0	42
P	ER(, 68)	ER(165, 68)	77.0	230.0	42
P	ER(, 68)	ER(165, 68)	87.0	230.0	42
P	ER(, 68)	ER(161, 68)	34.0	8.5	42
P	ER(, 68)	ER(161, 68)	47.0	17.0	42
P	ER(, 68)	ER(161, 68)	57.0	120.0	42
P	ER(, 68)	ER(161, 68)	67.0	400.0	42
P	ER(, 68)	ER(161, 68)	77.0	300.0	42
P	ER(, 68)	ER(161, 68)	87.0	260.0	42
P	ER(, 68)	ER(160, 68)	57.0	42.0	42
P	ER(, 68)	ER(160, 68)	67.0	80.0	42
P	ER(, 68)	ER(160, 68)	77.0	190.0	42
P	ER(, 68)	ER(160, 68)	87.0	240.0	42
P	ER(, 68)	HO(161, 67)	57.0	45.0	42
P	ER(, 68)	HO(161, 67)	57.0	3.8	42
P	ER(, 68)	HO(161, 67)	67.0	93.0	42
P	ER(, 68)	HO(161, 67)	67.0	17.0	42
P	ER(, 68)	HO(161, 67)	87.0	80.0	42
P	ER(, 68)	HO(160, 67)	77.0	17.0	42
P	ER(, 68)	HO(160, 67)	87.0	25.0	42
P	ER(, 68)	DY(159, 66)	67.0	5.2	42
P	ER(, 68)	DY(159, 66)	77.0	33.0	42
P	ER(, 68)	DY(159, 66)	87.0	33.0	42
P	ER(, 68)	DY(157, 66)	67.0	1.7	42
P	ER(, 68)	DY(157, 66)	77.0	5.3	42
P	ER(, 68)	DY(157, 66)	87.0	7.1	42
P	ER(168, 68)	TM(167, 69)	22.0	1700.0	42
P	ER(168, 68)	TM(167, 69)	28.0	4.0	42
P	ER(170, 68)	TM(168, 69)	22.0	520.0	42
P	ER(170, 68)	TM(168, 69)	28.0	620.0	42
P	ER(170, 68)	TM(168, 69)	34.0	260.0	42
P	ER(170, 68)	ER(169, 68)	22.0	4.3	42
P	ER(170, 68)	ER(169, 68)	28.0	5.9	42
P	ER(170, 68)	ER(169, 68)	34.0	29.0	42
P	ER(170, 68)	ER(169, 68)	40.0	46.0	42
P	ER(170, 68)	ER(169, 68)	47.0	69.0	42
P	ER(170, 68)	ER(169, 68)	57.0	120.0	42
P	ER(170, 68)	ER(169, 68)	67.0	110.0	42
P	ER(170, 68)	ER(169, 68)	77.0	87.0	42
P	ER(170, 68)	ER(169, 68)	87.0	62.0	42
P	TA(181, 73)	W(181, 74)	24.0	47.0	43
P	TA(181, 73)	W(181, 74)	30.0	44.0	43
P	TA(181, 73)	W(179, 74)	24.0	1200.0	43
P	TA(181, 73)	W(179, 74)	30.0	920.0	43
P	TA(181, 73)	W(179, 74)	36.0	280.0	43
P	TA(181, 73)	W(178, 74)	30.0	240.0	43
P	TA(181, 73)	W(178, 74)	36.0	760.0	43
P	TA(181, 73)	W(178, 74)	42.0	430.0	43
P	TA(181, 73)	W(178, 74)	48.0	200.0	43
P	TA(181, 73)	W(178, 74)	54.0	130.0	43
P	TA(181, 73)	W(178, 74)	64.0	120.0	43
P	TA(181, 73)	W(178, 74)	74.0	62.0	43
P	TA(181, 73)	W(178, 74)	84.0	64.0	43
P	TA(181, 73)	W(178, 74)	340.0	75.0	29

INC. PART	TARGET NUCLEUS	RESIDUAL NUCLEUS	ENERGY (MEV)	SIGMA (MB) EXPERIMENT	REF
P	TA(181, 73)	W(177, 74)	36.0	130.0	43
P	TA(181, 73)	W(177, 74)	42.0	550.0	43
P	TA(181, 73)	W(177, 74)	48.0	830.0	43
P	TA(181, 73)	W(177, 74)	54.0	650.0	43
P	TA(181, 73)	W(177, 74)	64.0	200.0	43
P	TA(181, 73)	W(177, 74)	74.0	110.0	43
P	TA(181, 73)	W(177, 74)	84.0	98.0	43
P	TA(181, 73)	W(177, 74)	340.0	35.0	29
P	TA(181, 73)	W(176, 74)	48.0	87.0	43
P	TA(181, 73)	W(176, 74)	54.0	420.0	43
P	TA(181, 73)	W(176, 74)	64.0	320.0	43
P	TA(181, 73)	W(176, 74)	74.0	170.0	43
P	TA(181, 73)	W(176, 74)	84.0	73.0	43
P	TA(181, 73)	W(176, 74)	340.0	75.0	29
P	TA(181, 73)	TA(180, 73)	24.0	100.0	43
P	TA(181, 73)	TA(180, 73)	30.0	110.0	43
P	TA(181, 73)	TA(180, 73)	36.0	180.0	43
P	TA(181, 73)	TA(180, 73)	42.0	170.0	43
P	TA(181, 73)	TA(180, 73)	280.0	44.0	29
P	TA(181, 73)	TA(180, 73)	380.0	62.0	29
P	TA(181, 73)	TA(180, 73)	380.0	53.0	29
P	TA(181, 73)	TA(180, 73)	400.0	46.0	29
P	TA(181, 73)	TA(179, 73)	24.0	29.0	43
P	TA(181, 73)	TA(179, 73)	30.0	74.0	43
P	TA(181, 73)	TA(179, 73)	36.0	190.0	43
P	TA(181, 73)	TA(178, 73)	36.0	38.0	43
P	TA(181, 73)	TA(178, 73)	42.0	82.0	43
P	TA(181, 73)	TA(178, 73)	48.0	180.0	43
P	TA(181, 73)	TA(178, 73)	54.0	180.0	43
P	TA(181, 73)	TA(178, 73)	340.0	175.0	29
P	TA(181, 73)	TA(177, 73)	36.0	5.0	43
P	TA(181, 73)	TA(177, 73)	42.0	120.0	43
P	TA(181, 73)	TA(177, 73)	48.0	280.0	43
P	TA(181, 73)	TA(177, 73)	54.0	270.0	43
P	TA(181, 73)	TA(177, 73)	64.0	170.0	43
P	TA(181, 73)	TA(177, 73)	74.0	180.0	43
P	TA(181, 73)	TA(177, 73)	84.0	220.0	43
P	TA(181, 73)	TA(177, 73)	340.0	31.0	29
P	TA(181, 73)	TA(175, 73)	64.0	130.0	43
P	TA(181, 73)	TA(175, 73)	74.0	440.0	43
P	TA(181, 73)	TA(175, 73)	84.0	290.0	43
P	TA(181, 73)	TA(174, 73)	84.0	300.0	43
P	TA(181, 73)	TA(173, 73)	84.0	160.0	43
P	TA(181, 73)	TA(, 73)	340.0	305.0	29
P	TA(181, 73)	HF(180, 72)	42.0	0.03	43
P	TA(181, 73)	HF(180, 72)	54.0	0.05	43
P	TA(181, 73)	HF(178, 72)	56.0	40.0 + 2.0	35
P	TA(181, 73)	HF(175, 72)	42.0	6.0	43
P	TA(181, 73)	HF(175, 72)	54.0	13.0	43
P	TA(181, 73)	HF(175, 72)	64.0	10.0	43
P	TA(181, 73)	HF(175, 72)	74.0	3.0	43
P	TA(181, 73)	HF(175, 72)	84.0	2.0	43
P	TA(181, 73)	HF(175, 72)	340.0	52.0	29
P	TA(181, 73)	HF(173, 72)	64.0	25.0	43
P	TA(181, 73)	HF(173, 72)	74.0	21.0	43

INC. PART	TARGET NUCLEUS	RESIDUAL NUCLEUS	ENERGY (MEV)	SIGMA (MB) EXPERIMENT	REF
P	TA(181, 73)	HF(173, 72)	84.0	24.0	43
P	TA(181, 73)	HF(173, 72)	340.0	150.0	29
P	TA(181, 73)	HF(172, 72)	74.0	22.0	43
P	TA(181, 73)	HF(171, 72)	74.0	3.5	43
P	TA(181, 73)	HF(171, 72)	84.0	21.0	43
P	TA(181, 73)	HF(171, 72)	340.0	77.0	29
P	TA(181, 73)	LU(177, 71)	42.0	0.05	43
P	TA(181, 73)	LU(176, 71)	42.0	0.008	43
P	TA(181, 73)	LU(176, 71)	54.0	0.08	43
P	TA(181, 73)	LU(176, 71)	64.0	0.2	43
P	TA(181, 73)	LU(172, 71)	64.0	0.07	43
P	TA(181, 73)	LU(172, 71)	74.0	1.2	43
P	TA(181, 73)	LU(172, 71)	84.0	3.7	43
P	TA(181, 73)	LU(171, 71)	74.0	0.3	43
P	TA(181, 73)	LU(171, 71)	84.0	2.6	43
P	TA(181, 73)	LU(170, 71)	340.0	26.2	29
P	TA(181, 73)	LU(, 71)	340.0	73.2	29
P	TA(181, 73)	YB(169, 70)	340.0	37.5	29
P	TA(181, 73)	YB(166, 70)	340.0	87.0	29
P	TA(181, 73)	TM(167, 69)	340.0	58.3	29
P	TA(181, 73)	TM(165, 69)	340.0	55.9	29
P	TA(181, 73)	ER(160, 68)	340.0	35.9	29
P	TA(181, 73)	CE(135, 58)	340.0	0.25	29
P	TA(181, 73)	CE(134, 58)	340.0	0.022	29
P	TA(181, 73)	BA(131, 56)	340.0	0.015	29
P	TA(181, 73)	BA(129, 56)	340.0	0.0029	29
P	TA(181, 73)	BA(128, 56)	340.0	0.0047	29
P	TA(181, 73)	CS(129, 55)	340.0	0.0025	29
P	TA(181, 73)	CS(127, 55)	340.0	0.0054	29
P	TA(181, 73)	TE(121, 52)	340.0	0.032	29
P	TA(181, 73)	TE(119, 52)	340.0	0.013	29
P	TA(181, 73)	TE(117, 52)	340.0	0.0052	29
P	TA(181, 73)	IN(114, 49)	340.0	0.024	29
P	TA(181, 73)	IN(111, 49)	340.0	0.015	29
P	TA(181, 73)	IN(110, 49)	340.0	0.022	29
P	TA(181, 73)	IN(109, 49)	340.0	0.0071	29
P	TA(181, 73)	CD(115, 48)	340.0	0.0031	29
P	TA(181, 73)	CD(115, 48)	340.0	0.0018	29
P	TA(181, 73)	CD(107, 48)	340.0	0.014	29
P	TA(181, 73)	AG(113, 47)	340.0	0.0033	29
P	TA(181, 73)	AG(112, 47)	340.0	0.0074	29
P	TA(181, 73)	AG(111, 47)	340.0	0.020	29
P	TA(181, 73)	AG(110, 47)	340.0	0.033	29
P	TA(181, 73)	AG(105, 47)	340.0	0.031	29
P	TA(181, 73)	PD(109, 46)	340.0	0.0059	29
P	TA(181, 73)	RH(107, 45)	340.0	0.010	29
P	TA(181, 73)	RH(105, 45)	340.0	0.025	29
P	TA(181, 73)	RH(101, 45)	340.0	0.0026	29
P	TA(181, 73)	RU(105, 44)	340.0	0.0037	29
P	TA(181, 73)	RU(103, 44)	340.0	0.032	29
P	TA(181, 73)	RU(97, 44)	340.0	0.0017	29
P	TA(181, 73)	MO(99, 42)	340.0	0.053	29
P	TA(181, 73)	ZR(97, 40)	340.0	0.0048	29
P	TA(181, 73)	ZR(95, 40)	340.0	0.031	29
P	TA(181, 73)	SR(91, 38)	340.0	0.018	29

INC. PART	TARGET NUCLEUS	RESIDUAL NUCLEUS	ENERGY (MEV)	SIGMA (MB) EXPERIMENT	REF
P	TA(181, 73)	SR(89, 38)	340.0	0.041	29
P	TA(181, 73)	RB(86, 37)	340.0	0.054	29
P	TA(181, 73)	RB(84, 37)	340.0	0.089	29
P	TA(181, 73)	BR(83, 35)	340.0	0.058	29
P	TA(181, 73)	BR(82, 35)	340.0	0.092	29
P	TA(181, 73)	BR(80, 35)	340.0	0.109	29
P	TA(181, 73)	AS(77, 33)	340.0	0.035	29
P	TA(181, 73)	AS(76, 33)	340.0	0.064	29
P	TA(181, 73)	AS(74, 33)	340.0	0.024	29
P	TA(181, 73)	GA(73, 31)	340.0	0.051	29
P	TA(181, 73)	GA(72, 31)	340.0	0.074	29
P	TA(181, 73)	CU(67, 29)	340.0	0.062	29
P	TA(181, 73)	CU(64, 29)	340.0	0.075	29
P	TA(181, 73)	NI(66, 28)	340.0	0.017	29
P	TA(181, 73)	NI(65, 28)	340.0	0.044	29
P	TA(181, 73)	CO(61, 27)	340.0	0.062	29
P	TA(181, 73)	FE(59, 26)	340.0	0.058	29
P	TA(181, 73)	MN(56, 25)	340.0	0.038	29
P	TA(181, 73)	MN(52, 25)	340.0	0.0021	29
P	TA(181, 73)	K(43, 19)	340.0	0.020	29
P	TA(181, 73)	K(42, 19)	340.0	0.0076	29
P	TA(181, 73)	MG(28, 12)	340.0	0.040	29
P	TA(181, 73)	NA(24, 11)	340.0	0.007	29
P	W(186, 74)	TA(185, 73)	130.0	2.98 + 0.48	25
P	W(186, 74)	TA(185, 73)	210.0	5.55	25
P	W(186, 74)	TA(185, 73)	300.0	5.48	25
P	W(186, 74)	TA(185, 73)	400.0	6.93 + 1.74	25
P	W(186, 74)	HF(184, 72)	130.0	0.243 + 0.033	25
P	W(186, 74)	HF(184, 72)	210.0	0.144 + 0.001	25
P	W(186, 74)	HF(184, 72)	300.0	0.295 + 0.059	25
P	W(186, 74)	HF(184, 72)	400.0	0.316 + 0.065	25
P	RE(187, 75)	TA(185, 73)	130.0	(3.85 + 1.35)E-2	25
P	RE(187, 75)	TA(185, 73)	210.0	(7.28 + 1.05)E-2	25
P	RE(187, 75)	TA(185, 73)	300.0	0.0851	25
P	RE(187, 75)	TA(185, 73)	400.0	(13.2 + 0.8)E-2	25
P	RE(187, 75)	HF(184, 72)	130.0	(4.88 + 0.20)E-3	25
P	RE(187, 75)	HF(184, 72)	210.0	(3.19 + 0.14)E-3	25
P	RE(187, 75)	HF(184, 72)	300.0	(3.80 + 0.87)E-3	25
P	RE(187, 75)	HF(184, 72)	400.0	0.00497	25
P	IR(, 77)	PT(191, 78)	23.0	620.0	44
P	IR(, 77)	PT(191, 78)	30.0	460.0	44
P	IR(, 77)	PT(189, 78)	23.0	160.0	44
P	IR(, 77)	PT(189, 78)	30.0	340.0	44
P	IR(, 77)	PT(189, 78)	38.0	240.0	44
P	IR(, 77)	PT(189, 78)	47.0	640.0	44
P	IR(, 77)	PT(189, 78)	57.0	230.0	44
P	IR(, 77)	PT(189, 78)	67.0	160.0	44
P	IR(, 77)	PT(189, 78)	77.0	120.0	44
P	IR(, 77)	PT(189, 78)	84.0	120.0	44
P	IR(, 77)	PT(188, 78)	30.0	49.0	44
P	IR(, 77)	PT(188, 78)	38.0	490.0	44
P	IR(, 77)	PT(188, 78)	47.0	250.0	44
P	IR(, 77)	PT(188, 78)	57.0	550.0	44
P	IR(, 77)	PT(188, 78)	67.0	290.0	44
P	IR(, 77)	PT(188, 78)	77.0	150.0	44

INC. PART	TARGET NUCLEUS	RESIDUAL NUCLEUS	ENERGY (MEV)	SIGMA (MB) EXPERIMENT	REF
P	IR(, 77)	PT(188, 78)	84.4	130.0	44
P	IR(, 77)	PT(186, 78)	47.0	(50.0)	44
P	IR(, 77)	PT(186, 78)	57.0	250.0	44
P	IR(, 77)	PT(186, 78)	67.0	230.0	44
P	IR(, 77)	PT(186, 78)	77.0	220.0	44
P	IR(, 77)	PT(186, 78)	84.0	190.0	44
P	IR(, 77)	PT(186, 78)	87.0	180.0	44
P	IR(, 77)	IR(190, 77)	23.0	0.3	44
P	IR(, 77)	IR(190, 77)	23.0	16.0	44
P	IR(, 77)	IR(190, 77)	30.0	2.8	44
P	IR(, 77)	IR(190, 77)	30.0	36.0	44
P	IR(, 77)	IR(190, 77)	38.0	10.0	44
P	IR(, 77)	IR(190, 77)	38.0	53.0	44
P	IR(, 77)	IR(190, 77)	47.0	17.0	44
P	IR(, 77)	IR(190, 77)	47.0	240.0	44
P	IR(, 77)	IR(190, 77)	57.0	180.0	44
P	IR(, 77)	IR(190, 77)	67.0	140.0	44
P	IR(, 77)	IR(190, 77)	77.0	120.0	44
P	IR(, 77)	IR(190, 77)	84.0	160.0	44
P	IR(, 77)	IR(188, 77)	38.0	17.0	44
P	IR(, 77)	IR(188, 77)	47.0	66.0	44
P	IR(, 77)	IR(188, 77)	57.0	110.0	44
P	IR(, 77)	IR(188, 77)	67.0	180.0	44
P	IR(, 77)	IR(188, 77)	77.0	160.0	44
P	IR(, 77)	IR(188, 77)	84.0	200.0	44
P	IR(, 77)	IR(186, 77)	57.0	240.0	44
P	IR(, 77)	IR(186, 77)	67.0	450.0	44
P	IR(, 77)	IR(186, 77)	77.0	500.0	44
P	IR(, 77)	IR(186, 77)	84.0	670.0	44
P	IR(, 77)	IR(186, 77)	87.0	500.0	44
P	IR(, 77)	IR(185, 77)	57.0	47.0	44
P	IR(, 77)	IR(185, 77)	67.0	180.0	44
P	IR(, 77)	IR(185, 77)	77.0	210.0	44
P	IR(, 77)	IR(185, 77)	84.0	210.0	44
P	IR(, 77)	OS(185, 76)	57.0	11.0	44
P	IR(, 77)	OS(185, 76)	67.0	33.0	44
P	IR(, 77)	OS(185, 76)	77.0	17.0	44
P	IR(, 77)	OS(185, 76)	84.0	37.0	44
P	IR(, 77)	OS(183, 76)	57.0	3.3	44
P	IR(, 77)	OS(183, 76)	67.0	7.1	44
P	IR(, 77)	OS(183, 76)	77.0	12.0	44
P	IR(, 77)	OS(183, 76)	84.0	31.0	44
P	IR(, 77)	OS(183, 76)	87.0	30.0	44
P	IR(, 77)	OS(182, 76)	67.0	5.6	44
P	IR(, 77)	OS(182, 76)	77.0	7.8	44
P	IR(, 77)	OS(182, 76)	84.0	9.0	44
P	IR(, 77)	OS(182, 76)	87.0	13.0	44
P	IR(, 77)	RE(181, 75)	77.0	6.9	44
P	IR(, 77)	RE(181, 75)	84.0	18.0	44
P	IR(, 77)	RE(181, 75)	87.0	14.0	44
P	IR(193, 77)	IR(192, 77)	23.0	60.0	44
P	IR(193, 77)	IR(192, 77)	30.0	99.0	44
P	IR(193, 77)	IR(192, 77)	38.0	180.0	44
P	IR(193, 77)	IR(192, 77)	47.0	160.0	44
P	IR(193, 77)	IR(192, 77)	57.0	180.0	44

INC. PART	TARGET NUCLEUS	RESIDUAL NUCLEUS	ENERGY (MEV)	SIGMA (MB) EXPERIMENT	REF
P	IR(193, 77)	IR(192, 77)	67.0	110.0	44
P	IR(193, 77)	IR(192, 77)	77.0	140.0	44
P	IR(193, 77)	IR(192, 77)	84.0	120.0	44
P	AU(197, 79)	PB(203, 82)	380.0	0.002 + 0.002	29
P	AU(197, 79)	PB(202, 82)	380.0	0.006 + 0.008	29
P	AU(197, 79)	PB(201, 82)	380.0	0.030 + 0.008	29
P	AU(197, 79)	PB(200, 82)	380.0	0.097 + 0.006	29
P	AU(197, 79)	PB(199, 82)	380.0	0.131 + 0.040	29
P	AU(197, 79)	PB(198, 82)	380.0	0.089 + 0.006	29
P	AU(197, 79)	TL(202, 81)	380.0	0.0011	29
P	AU(197, 79)	TL(201, 81)	380.0	0.094 + 0.028	29
P	AU(197, 79)	TL(200, 81)	380.0	1.46 + 0.34	29
P	AU(197, 79)	TL(199, 81)	380.0	22.5 + 4.7	29
P	AU(197, 79)	TL(198, 81)	380.0	42.0 + 8.0	29
P	AU(197, 79)	TL(197, 81)	380.0	1.71 + 0.27	29
P	AU(197, 79)	TL(196, 81)	380.0	17.0 + 7.0	29
P	AU(197, 79)	TL(195, 81)	380.0	13.6 + 0.9	29
P	AU(197, 79)	HG(197, 80)	20.0	17.0	45
P	AU(197, 79)	HG(197, 80)	20.0	19.0	45
P	AU(197, 79)	HG(195, 80)	24.0	140.0	45
P	AU(197, 79)	HG(195, 80)	24.0	68.0	45
P	AU(197, 79)	HG(195, 80)	28.0	600.0	45
P	AU(197, 79)	HG(195, 80)	28.0	270.0	45
P	AU(197, 79)	HG(195, 80)	31.0	750.0	45
P	AU(197, 79)	HG(195, 80)	31.0	310.0	45
P	AU(197, 79)	HG(195, 80)	34.0	590.0	45
P	AU(197, 79)	HG(195, 80)	34.0	150.0	45
P	AU(197, 79)	HG(195, 80)	37.0	340.0	45
P	AU(197, 79)	HG(195, 80)	37.0	72.0	45
P	AU(197, 79)	HG(195, 80)	40.0	260.0	45
P	AU(197, 79)	HG(195, 80)	50.0	250.0	46
P	AU(197, 79)	HG(195, 80)	100.0	60.0	47
P	AU(197, 79)	HG(195, 80)	140.0	27.0	46
P	AU(197, 79)	HG(193, 80)	50.0	900.0	46
P	AU(197, 79)	HG(193, 80)	100.0	250.0	47
P	AU(197, 79)	HG(193, 80)	140.0	73.0	46
P	AU(197, 79)	HG(192, 80)	50.0	90.0	46
P	AU(197, 79)	HG(192, 80)	100.0	200.0	47
P	AU(197, 79)	HG(192, 80)	140.0	90.0	46
P	AU(197, 79)	HG(191, 80)	100.0	300.0	47
P	AU(197, 79)	HG(191, 80)	140.0	82.0	46
P	AU(197, 79)	HG(190, 80)	100.0	260.0	47
P	AU(197, 79)	HG(190, 80)	140.0	75.0	46
P	AU(197, 79)	AU(197, 79)	282.0	71.0 + 5.7	28
P	AU(197, 79)	AU(196, 79)	18.0	23.6	47
P	AU(197, 79)	AU(196, 79)	22.3	83.3	47
P	AU(197, 79)	AU(196, 79)	24.0	0.60	45
P	AU(197, 79)	AU(196, 79)	24.0	23.0	45
P	AU(197, 79)	AU(196, 79)	24.0	24.0	45
P	AU(197, 79)	AU(196, 79)	27.5	141.0	47
P	AU(197, 79)	AU(196, 79)	28.0	5.1	45
P	AU(197, 79)	AU(196, 79)	28.0	98.0	45
P	AU(197, 79)	AU(196, 79)	28.0	104.0	45
P	AU(197, 79)	AU(196, 79)	28.3	152.0	47
P	AU(197, 79)	AU(196, 79)	31.0	14.0	45

INC. PART	TARGET NUCLEUS	RESIDUAL NUCLEUS	ENERGY (MEV)	SIGMA (MB) EXPERIMENT	REF
P	AU(197, 79)	AU(196, 79)	31.0	124.0	45
P	AU(197, 79)	AU(196, 79)	31.0	138.0	45
P	AU(197, 79)	AU(196, 79)	32.4	169.0	47
P	AU(197, 79)	AU(196, 79)	32.5	146.0 + 30.0	18
P	AU(197, 79)	AU(196, 79)	33.2	178.0	47
P	AU(197, 79)	AU(196, 79)	34.0	21.0	45
P	AU(197, 79)	AU(196, 79)	34.0	149.0	45
P	AU(197, 79)	AU(196, 79)	34.0	170.0	45
P	AU(197, 79)	AU(196, 79)	37.0	37.0	45
P	AU(197, 79)	AU(196, 79)	37.0	154.0	45
P	AU(197, 79)	AU(196, 79)	37.0	191.0	45
P	AU(197, 79)	AU(196, 79)	37.3	168.0	47
P	AU(197, 79)	AU(196, 79)	37.9	182.0	47
P	AU(197, 79)	AU(196, 79)	37.9	185.0	47
P	AU(197, 79)	AU(196, 79)	40.0	44.0	45
P	AU(197, 79)	AU(196, 79)	40.0	147.0	45
P	AU(197, 79)	AU(196, 79)	40.0	191.0	45
P	AU(197, 79)	AU(196, 79)	42.2	170.0	47
P	AU(197, 79)	AU(196, 79)	42.8	174.0	47
P	AU(197, 79)	AU(196, 79)	42.8	177.0	47
P	AU(197, 79)	AU(196, 79)	44.0	175.0 + 30.0	18
P	AU(197, 79)	AU(196, 79)	46.0	40.0	45
P	AU(197, 79)	AU(196, 79)	46.0	140.0	45
P	AU(197, 79)	AU(196, 79)	46.0	180.0	45
P	AU(197, 79)	AU(196, 79)	47.2	175.0	47
P	AU(197, 79)	AU(196, 79)	47.4	194.0	47
P	AU(197, 79)	AU(196, 79)	51.9	164.0	47
P	AU(197, 79)	AU(196, 79)	52.0	25.0	45
P	AU(197, 79)	AU(196, 79)	52.0	145.0	45
P	AU(197, 79)	AU(196, 79)	52.0	170.0	45
P	AU(197, 79)	AU(196, 79)	52.5	186.0	47
P	AU(197, 79)	AU(196, 79)	54.5	177.0 + 30.0	18
P	AU(197, 79)	AU(196, 79)	56.8	174.0	47
P	AU(197, 79)	AU(196, 79)	57.4	179.0	47
P	AU(197, 79)	AU(196, 79)	60.0	23.0	45
P	AU(197, 79)	AU(196, 79)	60.0	136.0	45
P	AU(197, 79)	AU(196, 79)	60.0	159.0	45
P	AU(197, 79)	AU(196, 79)	61.7	165.0	47
P	AU(197, 79)	AU(196, 79)	62.5	168.0	47
P	AU(197, 79)	AU(196, 79)	67.1	153.0	47
P	AU(197, 79)	AU(196, 79)	67.1	165.0	47
P	AU(197, 79)	AU(196, 79)	72.0	153.0	47
P	AU(197, 79)	AU(196, 79)	72.0	173.0 + 30.0	18
P	AU(197, 79)	AU(196, 79)	76.9	157.0	47
P	AU(197, 79)	AU(196, 79)	81.8	146.0	47
P	AU(197, 79)	AU(196, 79)	82.0	121.6 + 9.8	28
P	AU(197, 79)	AU(196, 79)	86.0	155.0	47
P	AU(197, 79)	AU(196, 79)	88.0	189.0 + 30.0	18
P	AU(197, 79)	AU(196, 79)	99.0	127.0 + 25.0	18
P	AU(197, 79)	AU(196, 79)	127.0	80.0 + 15.0	18
P	AU(197, 79)	AU(196, 79)	139.0	68.0 + 12.0	18
P	AU(197, 79)	AU(196, 79)	139.0	91.2 + 7.4	28
P	AU(197, 79)	AU(196, 79)	154.0	76.0 + 15.0	18
P	AU(197, 79)	AU(196, 79)	210.0	73.6 + 6.0	28
P	AU(197, 79)	AU(196, 79)	426.0	70.5 + 5.7	28

INC. PART	TARGET NUCLEUS	RESIDUAL NUCLEUS	ENERGY (MEV)	SIGMA (MB) EXPERIMENT	REF
P	AU(197, 79)	AU(195, 79)	23.2	8.1	47
P	AU(197, 79)	AU(195, 79)	28.3	26.8	47
P	AU(197, 79)	AU(195, 79)	33.2	69.0	47
P	AU(197, 79)	AU(195, 79)	37.9	116.0	47
P	AU(197, 79)	AU(195, 79)	37.9	115.0	47
P	AU(197, 79)	AU(195, 79)	42.8	125.0	47
P	AU(197, 79)	AU(195, 79)	42.8	138.0	47
P	AU(197, 79)	AU(195, 79)	47.4	149.0	47
P	AU(197, 79)	AU(195, 79)	52.5	144.0	47
P	AU(197, 79)	AU(195, 79)	57.4	142.0	47
P	AU(197, 79)	AU(195, 79)	62.5	136.0	47
P	AU(197, 79)	AU(195, 79)	67.1	115.0	47
P	AU(197, 79)	AU(195, 79)	67.1	130.0	47
P	AU(197, 79)	AU(195, 79)	72.0	138.0	47
P	AU(197, 79)	AU(195, 79)	72.0	122.0	47
P	AU(197, 79)	AU(195, 79)	76.9	135.0	47
P	AU(197, 79)	AU(195, 79)	76.9	122.0	47
P	AU(197, 79)	AU(195, 79)	81.8	114.0	47
P	AU(197, 79)	AU(195, 79)	86.0	120.0	47
P	AU(197, 79)	AU(194, 79)	32.4	6.0	47
P	AU(197, 79)	AU(194, 79)	37.3	18.0	47
P	AU(197, 79)	AU(194, 79)	37.9	27.0	47
P	AU(197, 79)	AU(194, 79)	37.9	24.0	47
P	AU(197, 79)	AU(194, 79)	42.2	80.0	47
P	AU(197, 79)	AU(194, 79)	42.8	68.0	47
P	AU(197, 79)	AU(194, 79)	47.2	112.0	47
P	AU(197, 79)	AU(194, 79)	47.4	126.0	47
P	AU(197, 79)	AU(194, 79)	51.9	125.0	47
P	AU(197, 79)	AU(194, 79)	52.5	146.0	47
P	AU(197, 79)	AU(194, 79)	56.8	144.0	47
P	AU(197, 79)	AU(194, 79)	57.4	144.0	47
P	AU(197, 79)	AU(194, 79)	61.7	150.0	47
P	AU(197, 79)	AU(194, 79)	62.5	159.0	47
P	AU(197, 79)	AU(194, 79)	67.1	149.0	47
P	AU(197, 79)	AU(194, 79)	67.1	141.0	47
P	AU(197, 79)	AU(194, 79)	72.0	133.0	47
P	AU(197, 79)	AU(194, 79)	76.9	138.0	47
P	AU(197, 79)	AU(194, 79)	81.8	136.0	47
P	AU(197, 79)	AU(194, 79)	86.0	137.0	47
P	AU(197, 79)	PT(194, 78)	56.0	45.0 + 2.0	35
P	AU(197, 79)	IR(192, 77)	50.0	0.05 + 0.03	34
P	AU(197, 79)	IR(192, 77)	110.0	0.35 + 0.07	34
P	AU(197, 79)	P(32, 15)	340.0	0.003	29
P	AU(197, 79)	NA(24, 11)	220.0	0.0059	29
P	AU(197, 79)	NA(24, 11)	340.0	0.0013	29
P	AU(197, 79)	F(18, 9)	420.0	0.0044 + 0.0022	29
P	PB(206, 82)	BI(205, 83)	52.5	150.0 + 22.5	29
P	PB(206, 82)	BI(205, 83)	56.3	110.0 + 16.5	29
P	PB(206, 82)	BI(205, 83)	63.8	90.0 + 13.5	29
P	PB(206, 82)	BI(203, 83)	52.5	470.0 + 70.5	29
P	PB(206, 82)	BI(203, 83)	56.3	300.0+ 45.0	29
P	PB(206, 82)	BI(203, 83)	63.8	210.0 + 31.5	29
P	PB(206, 82)	BI(202, 83)	52.5	590.0 + 88.5	29
P	PB(206, 82)	BI(202, 83)	56.3	380.0 + 57.0	29
P	PB(206, 82)	BI(202, 83)	63.8	210.0 + 31.5	29

INC. PART	TARGET NUCLEUS	RESIDUAL NUCLEUS	ENERGY (MEV)	SIGMA (MB) EXPERIMENT	REF
P	PB(206, 82)	BI(201, 83)	52.5	260.0 + 39.0	29
P	PB(206, 82)	BI(201, 83)	56.3	400.0 + 60.0	29
P	PB(206, 82)	BI(201, 83)	63.8	550.0 + 82.5	29
P	PB(206, 82)	BI(200, 83)	63.8	180.0 + 27.0	29
P	PB(206, 82)	GA(73, 31)	390.0	1.2 + 0.36	29
P	PB(206, 82)	GA(72, 31)	390.0	0.56 + 0.168	29
P	PB(206, 82)	GA(67, 31)	390.0	0.013 + 0.0039	29
P	PB(206, 82)	P(32, 15)	390.0	0.01 + 0.003	29
P	PB(206, 82)	MG(28, 12)	390.0	0.001 + 0.0003	29
P	PB(206, 82)	NA(24, 11)	390.0	0.03 + 0.009	29
P	PB(206, 82)	H(3, 1)	120.0	17.0 + 5.0	29
P	PB(206, 82)	H(3, 1)	300.0	73.0 + 22.0	29
P	BI(209, 83)	AT(211, 85)	180.0	0.057	29
P	BI(209, 83)	PO(209, 84)	135.0	20.0 + 5.0	48
P	BI(209, 83)	PO(208, 84)	135.0	37.0 + 7.0	48
P	BI(209, 83)	PO(207, 84)	50.4	80.0 + 12.0	29
P	BI(209, 83)	PO(206, 84)	135.0	59.0 + 6.0	48
P	BI(209, 83)	PO(206, 84)	380.0	7.7 + 5.6	29
P	BI(209, 83)	PO(206, 84)	412.0	2.0	29
P	BI(209, 83)	PO(205, 84)	50.4	800.0 + 120.0	29
P	BI(209, 83)	PO(205, 84)	55.0	680.0 + 102.0	29
P	BI(209, 83)	PO(205, 84)	59.7	450.0 + 67.50	29
P	BI(209, 83)	PO(205, 84)	135.0	72.5 + 7.5	48
P	BI(209, 83)	PO(205, 84)	380.0	12.9 + 9.4	29
P	BI(209, 83)	PO(205, 84)	412.0	0.4	29
P	BI(209, 83)	PO(204, 84)	50.4	210.0 + 31.50	29
P	BI(209, 83)	PO(204, 84)	55.0	400.0 + 60.0	29
P	BI(209, 83)	PO(204, 84)	59.7	490.0 + 73.50	29
P	BI(209, 83)	PO(204, 84)	66.3	470.0 + 70.50	29
P	BI(209, 83)	PO(204, 84)	74.9	450.0 + 67.50	29
P	BI(209, 83)	PO(204, 84)	135.0	71.5 + 3.5	48
P	BI(209, 83)	PO(204, 84)	380.0	8.9 + 6.5	29
P	BI(209, 83)	PO(204, 84)	412.0	1.6	29
P	BI(209, 83)	PO(203, 84)	59.7	90.0 + 13.5	29
P	BI(209, 83)	PO(203, 84)	66.3	390.0 + 58.50	29
P	BI(209, 83)	PO(203, 84)	74.9	490.0 + 73.50	29
P	BI(209, 83)	PO(203, 84)	79.9	390.0 + 58.5	29
P	BI(209, 83)	PO(203, 84)	83.7	360.0 + 54.0	29
P	BI(209, 83)	PO(203, 84)	135.0	69.5 + 5.5	48
P	BI(209, 83)	PO(203, 84)	380.0	12.5 + 9.1	29
P	BI(209, 83)	PO(203, 84)	412.0	0.39	29
P	BI(209, 83)	PO(202, 84)	135.0	71.0 + 5.0	48
P	BI(209, 83)	PO(202, 84)	380.0	5.2 + 3.8	29
P	BI(209, 83)	PO(202, 84)	412.0	0.78	29
P	BI(209, 83)	PO(201, 84)	135.0	80.0 + 8.0	48
P	BI(209, 83)	PO(201, 84)	380.0	13.3 + 9.7	29
P	BI(209, 83)	PO(200, 84)	135.0	90.0 + 4.0	48
P	BI(209, 83)	PO(200, 84)	380.0	10.0 + 7.3	29
P	BI(209, 83)	BI(207, 83)	380.0	15.7 + 3.6	29
P	BI(209, 83)	BI(207, 83)	412.0	20.0	29
P	BI(209, 83)	BI(206, 83)	380.0	49.3 + 5.9	29
P	BI(209, 83)	BI(206, 83)	412.0	16.0	29
P	BI(209, 83)	BI(205, 83)	380.0	50.0 + 7.0	29
P	BI(209, 83)	BI(205, 83)	412.0	3.0	29
P	BI(209, 83)	BI(204, 83)	380.0	37.1 + 3.2	29

INC. PART	TARGET NUCLEUS	RESIDUAL NUCLEUS	ENERGY (MEV)	SIGMA (MB) EXPERIMENT	REF
P	BI(209, 83)	BI(204, 83)	412.0	15.0	29
P	BI(209, 83)	BI(203, 83)	380.0	47.6 + 7.6	29
P	BI(209, 83)	BI(203, 83)	412.0	8.2	29
P	BI(209, 83)	BI(202, 83)	380.0	55.8 + 9.4	29
P	BI(209, 83)	BI(202, 83)	412.0	18.0	29
P	BI(209, 83)	BI(201, 83)	380.0	49.6 + 4.4	29
P	BI(209, 83)	BI(200, 83)	380.0	64.4	29
P	BI(209, 83)	BI(199, 83)	380.0	68.6	29
P	BI(209, 83)	BI(198, 83)	380.0	60.1	29
P	BI(209, 83)	PB(209, 82)	412.0	9.8	29
P	BI(209, 83)	PB(206, 82)	56.0	27.0 + 1.0	35
P	BI(209, 83)	PB(203, 82)	380.0	14.0 + 2.7	29
P	BI(209, 83)	PB(203, 82)	412.0	6.6	29
P	BI(209, 83)	PB(201, 82)	380.0	24.5 + 6.6	29
P	BI(209, 83)	PB(200, 82)	380.0	7.5 + 5.0	29
P	BI(209, 83)	PB(200, 82)	412.0	5.6	29
P	BI(209, 83)	PB(199, 82)	380.0	13.7	29
P	BI(209, 83)	PB(198, 82)	380.0	26.9	29
P	BI(209, 83)	PB(197, 82)	380.0	12.5	29
P	BI(209, 83)	TL(204, 81)	412.0	1.6	29
P	BI(209, 83)	TL(202, 81)	380.0	4.42 + 5.9	29
P	BI(209, 83)	TL(202, 81)	412.0	0.33	29
P	BI(209, 83)	TL(201, 81)	380.0	15.1 + 3.4	29
P	BI(209, 83)	TL(201, 81)	412.0	2.0	29
P	BI(209, 83)	TL(200, 81)	380.0	13.5 + 0.8	29
P	BI(209, 83)	TL(200, 81)	412.0	1.0	29
P	BI(209, 83)	TL(199, 81)	380.0	2.52 + 1.37	29
P	BI(209, 83)	TL(198, 81)	380.0	25.8 + 3.2	29
P	BI(209, 83)	TL(196, 81)	380.0	62.5 + 18.4	29
P	BI(209, 83)	TL(195, 81)	380.0	62.3 + 15.2	29
P	BI(209, 83)	TL(, 81)	380.0	73.3 + 21.1	29
P	BI(209, 83)	HG(197, 80)	380.0	4.65 + 2.83	29
P	BI(209, 83)	HG(195, 80)	380.0	3.89 + 1.97	29
P	BI(209, 83)	HG(194, 80)	380.0	(0.5)	29
P	BI(209, 83)	HG(193, 80)	380.0	7.0	29
P	BI(209, 83)	HG(192, 80)	380.0	22.0	29
P	BI(209, 83)	HG(191, 80)	380.0	21.9	29
P	BI(209, 83)	HG(190, 80)	380.0	39.8	29
P	BI(209, 83)	HG(189, 80)	380.0	1.05	29
P	BI(209, 83)	AU(196, 79)	380.0	0.46 + 0.07	29
P	BI(209, 83)	AU(194, 79)	380.0	1.30 + 0.17	29
P	BI(209, 83)	AU(193, 79)	380.0	0.6 + 0.6	29
P	BI(209, 83)	AU(192, 79)	380.0	14.2 + 1.3	29
P	BI(209, 83)	AU(191, 79)	380.0	17.0	29
P	BI(209, 83)	AU(189, 79)	380.0	7.8	29
P	BI(209, 83)	PT(189, 78)	380.0	16.8	29
P	BI(209, 83)	PT(188, 78)	380.0	20.8	29
P	BI(209, 83)	PT(186, 78)	380.0	28.1	29
P	BI(209, 83)	PT(, 78)	380.0	9.0	29
P	BI(209, 83)	CS(131, 55)	75.0	0.0023 + 0.00069	29
P	BI(209, 83)	CS(131, 55)	184.0	0.0027 + 0.00081	29
P	BI(209, 83)	CS(131, 55)	303.0	0.012 + 0.0036	29
P	BI(209, 83)	CS(129, 55)	75.0	0.0028 + 0.000084	29
P	BI(209, 83)	I(132, 53)	75.0	0.0006 + 0.00018	29
P	BI(209, 83)	I(132, 53)	120.0	0.00082 + 0.000246	29

INC. PART	TARGET NUCLEUS	RESIDUAL NUCLEUS	ENERGY (MEV)	SIGMA (MB) EXPERIMENT	REF
P	BI(209, 83)	I(132, 53)	184.0	0.0026 + 0.00078	29
P	BI(209, 83)	I(132, 53)	192.0	0.0070 + 0.0021	29
P	BI(209, 83)	I(132, 53)	242.0	0.007 + 0.0021	29
P	BI(209, 83)	I(132, 53)	303.0	0.011 + 0.0033	29
P	BI(209, 83)	I(132, 53)	355.0	0.012 + 0.0036	29
P	BI(209, 83)	I(132, 53)	373.0	0.012 + 0.0036	29
P	BI(209, 83)	I(130, 53)	75.0	0.00083 + 0.000249	29
P	BI(209, 83)	I(130, 53)	120.0	0.0017 + 0.00051	29
P	BI(209, 83)	I(130, 53)	184.0	0.0040 + 0.0012	29
P	BI(209, 83)	I(130, 53)	192.0	0.009 + 0.0027	29
P	BI(209, 83)	I(130, 53)	242.0	0.0076 + 0.00228	29
P	BI(209, 83)	I(130, 53)	303.0	0.012 + 0.0036	29
P	BI(209, 83)	I(130, 53)	355.0	0.011 + 0.0033	29
P	BI(209, 83)	I(130, 53)	373.0	0.014 + 0.0042	29
P	BI(209, 83)	I(128, 53)	75.0	0.0012 + 0.00036	29
P	BI(209, 83)	I(128, 53)	120.0	0.0025 + 0.00075	29
P	BI(209, 83)	I(128, 53)	184.0	0.0069 + 0.00207	29
P	BI(209, 83)	I(128, 53)	192.0	0.020 + 0.006	29
P	BI(209, 83)	I(128, 53)	242.0	0.017 + 0.0051	29
P	BI(209, 83)	I(128, 53)	303.0	0.022 + 0.0066	29
P	BI(209, 83)	I(128, 53)	355.0	0.025 + 0.0075	29
P	BI(209, 83)	I(128, 53)	373.0	0.024 + 0.0072	29
P	BI(209, 83)	I(126, 53)	75.0	0.0012 + 0.00036	29
P	BI(209, 83)	I(126, 53)	120.0	0.0027 + 0.00081	29
P	BI(209, 83)	I(126, 53)	184.0	0.013 + 0.0039	29
P	BI(209, 83)	I(126, 53)	192.0	0.032 + 0.0096	29
P	BI(209, 83)	I(126, 53)	242.0	0.037 + 0.0111	29
P	BI(209, 83)	I(126, 53)	303.0	0.041 + 0.0123	29
P	BI(209, 83)	I(126, 53)	355.0	0.048 + 0.0144	29
P	BI(209, 83)	I(126, 53)	373.0	0.050 + 0.015	29
P	BI(209, 83)	I(124, 53)	75.0	0.0003 + 0.00009	29
P	BI(209, 83)	I(124, 53)	120.0	0.0015 + 0.00045	29
P	BI(209, 83)	I(124, 53)	184.0	0.0065 + 0.00195	29
P	BI(209, 83)	I(124, 53)	192.0	0.010 + 0.003	29
P	BI(209, 83)	I(124, 53)	242.0	0.018 + 0.0054	29
P	BI(209, 83)	I(124, 53)	303.0	0.032 + 0.0096	29
P	BI(209, 83)	I(124, 53)	355.0	0.031 + 0.0093	29
P	BI(209, 83)	I(124, 53)	373.0	0.031 + 0.0093	29
P	BI(209, 83)	SN(115, 50)	75.0	0.12 + 0.036	29
P	BI(209, 83)	SN(115, 50)	192.0	2.5 + 0.75	29
P	BI(209, 83)	IN(114, 49)	75.0	0.0044 + 0.00132	29
P	BI(209, 83)	IN(114, 49)	120.0	0.13 + 0.039	29
P	BI(209, 83)	IN(114, 49)	184.0	0.32 + 0.096	29
P	BI(209, 83)	IN(114, 49)	192.0	0.67 + 0.201	29
P	BI(209, 83)	IN(114, 49)	242.0	2.4 + 0.72	29
P	BI(209, 83)	IN(114, 49)	303.0	2.4 + 0.72	29
P	BI(209, 83)	IN(114, 49)	355.0	5.3 + 1.59	29
P	BI(209, 83)	IN(114, 49)	373.0	4.9 + 1.47	29
P	BI(209, 83)	IN(111, 49)	75.0	0.12 + 0.036	29
P	BI(209, 83)	IN(111, 49)	192.0	1.2 + 0.36	29
P	BI(209, 83)	AG(113, 47)	75.0	0.28 + 0.084	29
P	BI(209, 83)	AG(113, 47)	120.0	1.5 + 0.45	29
P	BI(209, 83)	AG(113, 47)	184.0	1.7 + 0.51	29
P	BI(209, 83)	AG(113, 47)	192.0	1.2 + 0.36	29
P	BI(209, 83)	AG(113, 47)	242.0	1.9 + 0.57	29

INC. PART	TARGET NUCLEUS	RESIDUAL NUCLEUS	ENERGY (MEV)	SIGMA (MB) EXPERIMENT	REF
P	BI(209, 83)	AG(113, 47)	303.0	0.91 + 0.273	29
P	BI(209, 83)	AG(113, 47)	355.0	1.9 + 0.57	29
P	BI(209, 83)	AG(113, 47)	373.0	1.1 + 0.33	29
P	BI(209, 83)	AG(112, 47)	75.0	0.12 + 0.036	29
P	BI(209, 83)	AG(112, 47)	120.0	0.69 + 0.207	29
P	BI(209, 83)	AG(112, 47)	184.0	0.89 + 0.267	29
P	BI(209, 83)	AG(112, 47)	192.0	1.2 + 0.36	29
P	BI(209, 83)	AG(112, 47)	242.0	1.4 + 0.42	29
P	BI(209, 83)	AG(112, 47)	303.0	2.7 + 0.81	29
P	BI(209, 83)	AG(112, 47)	355.0	1.4 + 0.42	29
P	BI(209, 83)	AG(112, 47)	373.0	1.9 + 0.57	29
P	BI(209, 83)	AG(111, 47)	75.0	0.35 + 0.105	29
P	BI(209, 83)	AG(111, 47)	120.0	1.7 + 0.51	29
P	BI(209, 83)	AG(111, 47)	184.0	2.4 + 0.72	29
P	BI(209, 83)	AG(111, 47)	192.0	2.5 + 0.75	29
P	BI(209, 83)	AG(111, 47)	242.0	2.8 + 0.84	29
P	BI(209, 83)	AG(111, 47)	303.0	3.1 + 0.93	29
P	BI(209, 83)	AG(111, 47)	355.0	3.3 + 0.99	29
P	BI(209, 83)	AG(111, 47)	373.0	3.1 + 0.93	29
P	BI(209, 83)	PD(112, 46)	192.0	0.12 + 0.036	29
P	BI(209, 83)	PD(109, 46)	192.0	0.48 + 0.144	29
P	BI(209, 83)	PD(103, 46)	192.0	0.009 + 0.0027	29
P	BI(209, 83)	PD(100, 46)	192.0	0.016 + 0.0048	29
P	BI(209, 83)	NB(96, 41)	75.0	0.026 + 0.0078	29
P	BI(209, 83)	NB(96, 41)	120.0	0.70 + 0.21	29
P	BI(209, 83)	NB(96, 41)	184.0	2.3 + 0.69	29
P	BI(209, 83)	NB(96, 41)	242.0	3.4 + 1.02	29
P	BI(209, 83)	NB(96, 41)	303.0	5.1 + 1.53	29
P	BI(209, 83)	NB(96, 41)	355.0	3.3 + 0.99	29
P	BI(209, 83)	NB(96, 41)	373.0	4.1 + 1.23	29
P	BI(209, 83)	NB(95, 41)	75.0	0.017 + 0.0051	29
P	BI(209, 83)	NB(95, 41)	75.0	0.012 + 0.0036	29
P	BI(209, 83)	NB(95, 41)	120.0	0.14 + 0.042	29
P	BI(209, 83)	NB(95, 41)	120.0	0.079 + 0.0237	29
P	BI(209, 83)	NB(95, 41)	184.0	0.9 + 0.27	29
P	BI(209, 83)	NB(95, 41)	184.0	0.45 + 0.135	29
P	BI(209, 83)	NB(95, 41)	242.0	1.1 + 0.33	29
P	BI(209, 83)	NB(95, 41)	242.0	0.68 + 0.204	29
P	BI(209, 83)	NB(95, 41)	303.0	1.1 + 0.33	29
P	BI(209, 83)	NB(95, 41)	303.0	0.86 + 0.258	29
P	BI(209, 83)	NB(95, 41)	355.0	2.0 + 0.6	29
P	BI(209, 83)	NB(95, 41)	355.0	0.71 + 0.213	29
P	BI(209, 83)	NB(95, 41)	373.0	2.7 + 0.81	29
P	BI(209, 83)	NB(95, 41)	373.0	0.81 + 0.243	29
P	BI(209, 83)	RB(86, 37)	184.0	0.053 + 0.0159	29
P	BI(209, 83)	RB(86, 37)	242.0	0.047 + 0.0141	29
P	BI(209, 83)	BR(84, 35)	75.0	0.023 + 0.0069	29
P	BI(209, 83)	BR(84, 35)	120.0	0.19 + 0.057	29
P	BI(209, 83)	BR(83, 35)	75.0	0.034 + 0.0102	29
P	BI(209, 83)	BR(83, 35)	120.0	0.45 + 0.135	29
P	BI(209, 83)	BR(83, 35)	184.0	0.98 + 0.294	29
P	BI(209, 83)	BR(83, 35)	192.0	0.63 + 0.189	29
P	BI(209, 83)	BR(83, 35)	242.0	1.6 + 0.48	29
P	BI(209, 83)	BR(83, 35)	303.0	2.1 + 0.63	29
P	BI(209, 83)	BR(83, 35)	355.0	2.1 + 0.63	29

INC. PART	TARGET NUCLEUS	RESIDUAL NUCLEUS	ENERGY (MEV)	SIGMA (MB) EXPERIMENT	REF
P	BI(209, 83)	BR(83, 35)	373.0	1.6 + 0.48	29
P	BI(209, 83)	BR(82, 35)	75.0	0.0033 + 0.00099	29
P	BI(209, 83)	BR(82, 35)	120.0	0.13 + 0.039	29
P	BI(209, 83)	BR(82, 35)	184.0	0.76 + 0.228	29
P	BI(209, 83)	BR(82, 35)	192.0	0.36 + 0.108	29
P	BI(209, 83)	BR(82, 35)	242.0	1.2 + 0.36	29
P	BI(209, 83)	BR(82, 35)	303.0	1.4 + 0.42	29
P	BI(209, 83)	BR(82, 35)	355.0	1.5 + 0.45	29
P	BI(209, 83)	BR(82, 35)	373.0	1.5 + 0.45	29
P	BI(209, 83)	BR(80, 35)	184.0	0.63 + 0.189	29
P	BI(209, 83)	BR(80, 35)	192.0	0.23 + 0.069	29
P	BI(209, 83)	BR(80, 35)	242.0	1.1 + 0.33	29
P	BI(209, 83)	BR(80, 35)	303.0	1.3 + 0.39	29
P	BI(209, 83)	BR(80, 35)	355.0	1.0 + 0.3	29
P	BI(209, 83)	BR(80, 35)	373.0	1.8 + 0.54	29
P	BI(209, 83)	AS(77, 33)	75.0	0.074 + 0.0222	29
P	BI(209, 83)	AS(77, 33)	120.0	0.47 + 0.141	29
P	BI(209, 83)	AS(77, 33)	184.0	1.6 + 0.48	29
P	BI(209, 83)	AS(77, 33)	192.0	1.2 + 0.36	29
P	BI(209, 83)	AS(77, 33)	242.0	2.3 + 0.69	29
P	BI(209, 83)	AS(77, 33)	303.0	4.3 + 1.29	29
P	BI(209, 83)	AS(77, 33)	355.0	4.0 + 1.2	29
P	BI(209, 83)	AS(77, 33)	373.0	2.2 + 0.66	29
P	BI(209, 83)	AS(76, 33)	120.0	0.24 + 0.072	29
P	BI(209, 83)	AS(76, 33)	184.0	0.71 + 0.213	29
P	BI(209, 83)	AS(76, 33)	192.0	0.54 + 0.162	29
P	BI(209, 83)	AS(76, 33)	242.0	0.83 + 0.249	29
P	BI(209, 83)	AS(76, 33)	303.0	2.0 + 0.6	29
P	BI(209, 83)	AS(76, 33)	355.0	1.8 + 0.54	29
P	BI(209, 83)	AS(76, 33)	373.0	2.3 + 0.69	29
P	BI(209, 83)	AS(74, 33)	75.0	0.008 + 0.0024	29
P	BI(209, 83)	AS(74, 33)	120.0	0.041 + 0.0123	29
P	BI(209, 83)	AS(74, 33)	184.0	0.19 + 0.057	29
P	BI(209, 83)	AS(74, 33)	192.0	0.19 + 0.057	29
P	BI(209, 83)	AS(74, 33)	242.0	0.41 + 0.123	29
P	BI(209, 83)	AS(74, 33)	303.0	0.82 + 0.246	29
P	BI(209, 83)	AS(74, 33)	355.0	0.91 + 0.273	29
P	BI(209, 83)	AS(74, 33)	373.0	0.69 + 0.207	29
P	BI(209, 83)	CU(67, 29)	120.0	0.038 + 0.0114	29
P	BI(209, 83)	CU(67, 29)	184.0	0.12 + 0.036	29
P	BI(209, 83)	CU(67, 29)	192.0	0.12 + 0.036	29
P	BI(209, 83)	CU(67, 29)	242.0	0.23 + 0.069	29
P	BI(209, 83)	CU(67, 29)	303.0	0.37 + 0.111	29
P	BI(209, 83)	CU(67, 29)	355.0	0.39 + 0.117	29
P	BI(209, 83)	CU(67, 29)	373.0	0.41 + 0.123	29
P	BI(209, 83)	CU(64, 29)	120.0	0.0059 + 0.00177	29
P	BI(209, 83)	CU(64, 29)	184.0	0.036 + 0.0108	29
P	BI(209, 83)	CU(64, 29)	192.0	0.021 + 0.0063	29
P	BI(209, 83)	CU(64, 29)	242.0	0.034 + 0.0102	29
P	BI(209, 83)	CU(64, 29)	303.0	0.067 + 0.0201	29
P	BI(209, 83)	CU(64, 29)	355.0	0.090 + 0.027	29
P	BI(209, 83)	CU(64, 29)	373.0	0.11 + 0.033	29
P	BI(209, 83)	CU(61, 29)	120.0	0.0030 + 0.00090	29
P	BI(209, 83)	H(3, 1)	300.0	73.0 + 22.0	29
P	TH(232, 90)	PA(232, 91)	340.0	2.6 + 1.2	29

INC. PART	TARGET NUCLEUS	RESIDUAL NUCLEUS	ENERGY (MEV)	SIGMA (MB) EXPERIMENT	REF
P	TH(232, 90)	PA(230, 91)	340.0	4.2 + 0.3	29
P	TH(232, 90)	PA(228, 91)	340.0	1.7 + 0.2	29
P	TH(232, 90)	PA(227, 91)	340.0	1.0 + 0.2	29
P	TH(232, 90)	TH(231, 90)	340.0	68.0 + 3.0	29
P	TH(232, 90)	TH(228, 90)	340.0	30.0 + 3.0	29
P	TH(232, 90)	TH(227, 90)	340.0	22.0 + 5.0	29
P	TH(232, 90)	TH(226, 90)	340.0	17.0 + 0.3	29
P	TH(232, 90)	AC(228, 89)	32.0	0.30 + 0.10	49
P	TH(232, 90)	AC(228, 89)	35.0	0.90 + 0.30	49
P	TH(232, 90)	AC(228, 89)	46.0	3.90 + 0.60	49
P	TH(232, 90)	AC(228, 89)	51.0	2.60 + 0.80	49
P	TH(232, 90)	AC(228, 89)	59.0	3.90 + 1.20	49
P	TH(232, 90)	AC(228, 89)	70.0	3.20 + 1.0	49
P	TH(232, 90)	AC(228, 89)	80.0	4.10 + 0.60	49
P	TH(232, 90)	AC(228, 89)	95.0	4.20 + 0.90	49
P	TH(232, 90)	AC(228, 89)	115.0	11.90 + 2.40	49
P	TH(232, 90)	AC(228, 89)	340.0	28.0 + 0.1	29
P	TH(232, 90)	AC(227, 89)	32.0	0.40 + 0.10	49
P	TH(232, 90)	AC(227, 89)	35.0	1.60 + 0.30	49
P	TH(232, 90)	AC(227, 89)	46.0	2.60 + 0.40	49
P	TH(232, 90)	AC(227, 89)	51.0	2.80 + 0.60	49
P	TH(232, 90)	AC(227, 89)	59.0	2.50 + 0.50	49
P	TH(232, 90)	AC(227, 89)	70.0	3.50 + 0.70	49
P	TH(232, 90)	AC(227, 89)	80.0	4.20 + 0.70	49
P	TH(232, 90)	AC(227, 89)	95.0	4.60 + 0.90	49
P	TH(232, 90)	AC(227, 89)	115.0	7.70 + 1.50	49
P	TH(232, 90)	AC(227, 89)	340.0	14.0 + 0.8	29
P	TH(232, 90)	AC(226, 89)	35.0	0.20 + 0.10	49
P	TH(232, 90)	AC(226, 89)	46.0	1.85 + 0.20	49
P	TH(232, 90)	AC(226, 89)	51.0	2.60 + 0.40	49
P	TH(232, 90)	AC(226, 89)	59.0	2.75 + 0.40	49
P	TH(232, 90)	AC(226, 89)	70.0	2.30 + 0.40	49
P	TH(232, 90)	AC(226, 89)	80.0	2.70 + 0.30	49
P	TH(232, 90)	AC(226, 89)	95.0	3.15 + 0.50	49
P	TH(232, 90)	AC(226, 89)	115.0	6.85 + 1.0	49
P	TH(232, 90)	AC(226, 89)	340.0	10.0 + 1.6	29
P	TH(232, 90)	AC(225, 89)	42.0	0.30 + 0.10	49
P	TH(232, 90)	AC(225, 89)	46.0	0.75 + 0.10	49
P	TH(232, 90)	AC(225, 89)	51.0	2.50 + 0.40	49
P	TH(232, 90)	AC(225, 89)	59.0	3.20 + 0.50	49
P	TH(232, 90)	AC(225, 89)	70.0	3.10 + 0.50	49
P	TH(232, 90)	AC(225, 89)	80.0	2.90 + 0.30	49
P	TH(232, 90)	AC(225, 89)	95.0	3.20 0.50	49
P	TH(232, 90)	AC(225, 89)	115.0	5.80 + 0.90	49
P	TH(232, 90)	AC(225, 89)	340.0	14.0 + 3.0	29
P	TH(232, 90)	AC(224, 89)	51.0	0.60 + 0.10	49
P	TH(232, 90)	AC(224, 89)	59.0	2.20 + 0.30	49
P	TH(232, 90)	AC(224, 89)	70.0	2.85 + 0.40	49
P	TH(232, 90)	AC(224, 89)	80.0	2.20 + 0.20	49
P	TH(232, 90)	AC(224, 89)	95.0	1.60 + 0.20	49
P	TH(232, 90)	AC(224, 89)	115.0	3.60 + 0.60	49
P	TH(232, 90)	AC(224, 89)	340.0	12.5 + 0.9	29
P	TH(232, 90)	RA(233, 88)	340.0	6.7 + 1.4	29
P	TH(232, 90)	RA(227, 88)	340.0	(0.7)	29
P	TH(232, 90)	RA(225, 88)	340.0	2.1 + 0.5	29

INC. PART	TARGET NUCLEUS	RESIDUAL NUCLEUS	ENERGY (MEV)	SIGMA (MB) EXPERIMENT	REF
P	TH(232, 90)	RA(224, 88)	340.0	8.0 + 1.5	29
P	TH(232, 90)	RN(211, 86)	150.0	1.1 + 0.3	50
P	TH(232, 90)	RN(210, 86)	150.0	0.10 + 0.03	50
P	TH(232, 90)	AT(211, 85)	150.0	2.5 + 0.2	50
P	TH(232, 90)	AT(211, 85)	160.0	0.21	29
P	TH(232, 90)	AT(210, 85)	150.0	1.8 + 0.2	50
P	TH(232, 90)	AT(210, 85)	160.0	1.8	29
P	TH(232, 90)	AT(209, 85)	150.0	1.4 + 0.3	50
P	TH(232, 90)	AT(207, 85)	150.0	0.06 + 0.02	50
P	TH(232, 90)	AT(206, 85)	150.0	0.05 + 0.03	50
P	TH(232, 90)	PO(210, 84)	150.0	5.4 + 0.5	50
P	TH(232, 90)	PO(208, 84)	150.0	1.5 + 0.5	50
P	TH(232, 90)	PO(207, 84)	150.0	0.05 + 0.02	50
P	TH(232, 90)	PO(206, 84)	150.0	0.003 + 0.003	50
P	TH(232, 90)	BI(210, 83)	150.0	4.9 + 0.5	50
P	U(238, 92)	NP(238, 93)	340.0	0.46 + 0.05	29
P	U(238, 92)	NP(236, 93)	38.0	9.0 + 1.5	51
P	U(238, 92)	NP(236, 93)	55.0	5.0 + 1.0	51
P	U(238, 92)	NP(236, 93)	65.0	5.0 + 1.0	51
P	U(238, 92)	NP(236, 93)	70.0	6.0 + 1.0	51
P	U(238, 92)	NP(236, 93)	80.0	4.0 + 1.0	51
P	U(238, 92)	NP(236, 93)	120.0	2.5 + 0.5	51
P	U(238, 92)	NP(236, 93)	150.0	2.6 + 0.5	51
P	U(238, 92)	NP(236, 93)	340.0	1.7 + 0.1	29
P	U(238, 92)	NP(236, 93)	340.0	12.0	29
P	U(238, 92)	U(237, 92)	100.0	93.0	29
P	U(238, 92)	U(237, 92)	150.0	73.0	29
P	U(238, 92)	U(237, 92)	200.0	67.5	29
P	U(238, 92)	U(237, 92)	300.0	81.0	29
P	U(238, 92)	U(237, 92)	340.0	85.0	29
P	U(238, 92)	U(232, 92)	340.0	(4.0)	29
P	U(238, 92)	U(230, 92)	100.0	0.41 + 0.03	29
P	U(238, 92)	U(230, 92)	140.0	0.63 + 0.03	29
P	U(238, 92)	U(230, 92)	150.0	0.67	29
P	U(238, 92)	U(230, 92)	160.0	0.49 + 0.01	29
P	U(238, 92)	U(230, 92)	175.0	0.57	29
P	U(238, 92)	U(230, 92)	200.0	0.41	29
P	U(238, 92)	U(230, 92)	220.0	0.43	29
P	U(238, 92)	U(230, 92)	250.0	0.40	29
P	U(238, 92)	U(230, 92)	300.0	0.34	29
P	U(238, 92)	U(230, 92)	340.0	0.35 + 1.2	29
P	U(238, 92)	U(229, 92)	100.0	0.046	29
P	U(238, 92)	U(229, 92)	125.0	0.064	29
P	U(238, 92)	U(229, 92)	140.0	0.093 + 0.01	29
P	U(238, 92)	U(229, 92)	150.0	0.11	29
P	U(238, 92)	U(229, 92)	160.0	0.08 + 0.01	29
P	U(238, 92)	U(229, 92)	175.0	0.092	29
P	U(238, 92)	U(229, 92)	200.0	0.10	29
P	U(238, 92)	U(229, 92)	220.0	0.076	29
P	U(238, 92)	U(229, 92)	250.0	0.069	29
P	U(238, 92)	U(229, 92)	300.0	0.056	29
P	U(238, 92)	U(229, 92)	340.0	0.060 + 0.005	29
P	U(238, 92)	U(228, 92)	100.0	0.012	29
P	U(238, 92)	U(228, 92)	125.0	0.031	29
P	U(238, 92)	U(228, 92)	140.0	0.047 + 0.01	29

INC. PART	TARGET NUCLEUS	RESIDUAL NUCLEUS	ENERGY (MEV)	SIGMA (MB) EXPERIMENT	REF
P	U(238, 92)	U(228, 92)	150.0	0.046	29
P	U(238, 92)	U(228, 92)	160.0	0.036 + 0.001	29
P	U(238, 92)	U(228, 92)	175.0	0.038	29
P	U(238, 92)	U(228, 92)	200.0	0.030	29
P	U(238, 92)	U(228, 92)	220.0	0.035	29
P	U(238, 92)	U(228, 92)	250.0	0.037	29
P	U(238, 92)	U(228, 92)	300.0	0.032	29
P	U(238, 92)	U(228, 92)	340.0	0.038 + 0.002	29
P	U(238, 92)	PA(235, 91)	100.0	5.7 + 0.5	29
P	U(238, 92)	PA(235, 91)	175.0	7.3 + 0.5	29
P	U(238, 92)	PA(235, 91)	250.0	15.1 + 0.2	29
P	U(238, 92)	PA(235, 91)	340.0	21.0 + 2.0	29
P	U(238, 92)	PA(232, 91)	340.0	8.7 + 1.0	29
P	U(238, 92)	PA(230, 91)	100.0	1.5 + 0.2	29
P	U(238, 92)	PA(230, 91)	150.0	3.7	29
P	U(238, 92)	PA(230, 91)	190.0	3.6	29
P	U(238, 92)	PA(230, 91)	270.0	4.8 + 0.4	29
P	U(238, 92)	PA(230, 91)	340.0	5.1 + 0.5	29
P	U(238, 92)	PA(228, 91)	340.0	1.7 + 0.2	29
P	U(238, 92)	PA(227, 91)	100.0	0.086	29
P	U(238, 92)	PA(227, 91)	125.0	0.20	29
P	U(238, 92)	PA(227, 91)	150.0	0.30	29
P	U(238, 92)	PA(227, 91)	175.0	0.46	29
P	U(238, 92)	PA(227, 91)	190.0	0.56	29
P	U(238, 92)	PA(227, 91)	200.0	0.62	29
P	U(238, 92)	PA(227, 91)	220.0	0.68	29
P	U(238, 92)	PA(227, 91)	250.0	0.71	29
P	U(238, 92)	PA(227, 91)	270.0	0.71	29
P	U(238, 92)	PA(227, 91)	300.0	0.71	29
P	U(238, 92)	PA(227, 91)	340.0	0.71 + 0.06	29
P	U(238, 92)	TH(234, 90)	100.0	0.95 + 0.1	29
P	U(238, 92)	TH(234, 90)	150.0	1.8	29
P	U(238, 92)	TH(234, 90)	190.0	1.1	29
P	U(238, 92)	TH(234, 90)	300.0	2.5	29
P	U(238, 92)	TH(234, 90)	340.0	1.8 + 7.0	29
P	U(238, 92)	TH(231, 90)	100.0	0.50 + 0.05	29
P	U(238, 92)	TH(231, 90)	150.0	1.0	29
P	U(238, 92)	TH(231, 90)	190.0	1.1	29
P	U(238, 92)	TH(231, 90)	270.0	1.7	29
P	U(238, 92)	TH(231, 90)	340.0	2.4 + 0.1	29
P	U(238, 92)	TH(228, 90)	100.0	0.85	29
P	U(238, 92)	TH(228, 90)	150.0	0.9	29
P	U(238, 92)	TH(228, 90)	170.0	1.2 + 3.0	29
P	U(238, 92)	TH(228, 90)	190.0	0.95	29
P	U(238, 92)	TH(228, 90)	270.0	1.9	29
P	U(238, 92)	TH(228, 90)	340.0	2.9 + 0.9	29
P	U(238, 92)	TH(227, 90)	100.0	0.32 + 0.01	29
P	U(238, 92)	TH(227, 90)	150.0	0.9	29
P	U(238, 92)	TH(227, 90)	170.0	1.2 + 0.6	29
P	U(238, 92)	TH(227, 90)	190.0	1.3	29
P	U(238, 92)	TH(227, 90)	270.0	2.3 + 0.2	29
P	U(238, 92)	TH(227, 90)	340.0	3.3 + 0.4	29
P	U(238, 92)	TH(226, 90)	340.0	2.7 + 0.2	29
P	U(238, 92)	AC(228, 89)	340.0	0.62 + 0.08	29
P	U(238, 92)	AC(226, 89)	100.0	0.021	29

INC. PART	TARGET NUCLEUS	RESIDUAL NUCLEUS	ENERGY (MEV)	SIGMA (MB) EXPERIMENT	REF
P	U(238, 92)	AC(226, 89)	150.0	0.07	29
P	U(238, 92)	AC(226, 89)	190.0	0.24	29
P	U(238, 92)	AC(226, 89)	270.0	0.38	29
P	U(238, 92)	AC(226, 89)	340.0	0.54 + 0.09	29
P	U(238, 92)	AC(225, 89)	100.0	0.011	29
P	U(238, 92)	AC(225, 89)	150.0	0.009	29
P	U(238, 92)	AC(225, 89)	190.0	0.26	29
P	U(238, 92)	AC(225, 89)	270.0	0.41	29
P	U(238, 92)	AC(225, 89)	340.0	0.62 + 0.13	29
P	U(238, 92)	AC(224, 89)	340.0	1.05 + 0.05	29
P	U(238, 92)	RA(228, 88)	340.0	0.043	29
P	U(238, 92)	RA(225, 88)	340.0	0.26 + 0.02	29
P	U(238, 92)	RA(224, 88)	100.0	0.017	29
P	U(238, 92)	RA(224, 88)	150.0	0.09	29
P	U(238, 92)	RA(224, 88)	200.0	0.26	29
P	U(238, 92)	RA(224, 88)	270.0	0.44	29
P	U(238, 92)	RA(224, 88)	340.0	0.58 + 0.18	29
P	U(238, 92)	RA(224, 88)	340.0	2.8	29
P	U(238, 92)	RA(223, 88)	340.0	0.48 + 0.11	29
P	U(238, 92)	AT(210, 85)	200.0	0.08	29
P	U(238, 92)	AT(210, 85)	340.0	1.2	29
P	U(238, 92)	PO(210, 84)	200.0	0.17	29
P	U(238, 92)	PO(210, 84)	340.0	1.7	29
P	U(238, 92)	BI(210, 83)	200.0	1.1	29
P	U(238, 92)	BI(210, 83)	340.0	1.6	29
P	U(238, 92)	AU(, 79)	340.0	0.02	29
P	U(238, 92)	OS(193, 76)	340.0	0.01	29
P	U(238, 92)	YB(166, 70)	340.0	0.7	29
P	U(238, 92)	HO(166, 67)	340.0	0.05	29
P	U(238, 92)	DY(166, 66)	340.0	0.4	29
P	U(238, 92)	TB(164, 65)	170.0	0.05 + 0.02	29
P	U(238, 92)	TB(163, 65)	170.0	0.10 + 0.04	29
P	U(238, 92)	TB(161, 65)	170.0	0.3 + 0.1	29
P	U(238, 92)	TB(160, 65)	170.0	0.4 + 0.3	29
P	U(238, 92)	GD(159, 64)	170.0	0.45 + 0.10	29
P	U(238, 92)	EU(157, 63)	70.0	0.90	29
P	U(238, 92)	EU(157, 63)	100.0	0.89	29
P	U(238, 92)	EU(157, 63)	150.0	0.54	29
P	U(238, 92)	EU(157, 63)	170.0	0.50 + 0.08	29
P	U(238, 92)	EU(157, 63)	200.0	0.46	29
P	U(238, 92)	EU(157, 63)	250.0	0.47	29
P	U(238, 92)	EU(157, 63)	300.0	0.42	29
P	U(238, 92)	EU(157, 63)	340.0	0.40	29
P	U(238, 92)	EU(156, 63)	70.0	1.22	29
P	U(238, 92)	EU(156, 63)	100.0	1.31	29
P	U(238, 92)	EU(156, 63)	150.0	0.93	29
P	U(238, 92)	EU(156, 63)	170.0	0.36 + 0.10	29
P	U(238, 92)	EU(156, 63)	200.0	0.86	29
P	U(238, 92)	EU(156, 63)	250.0	0.92	29
P	U(238, 92)	EU(156, 63)	300.0	1.12	29
P	U(238, 92)	EU(156, 63)	340.0	2.8	29
P	U(238, 92)	EU(156, 63)	340.0	1.22	29
P	U(238, 92)	SM(156, 62)	170.0	0.47 + 0.07	29
P	U(238, 92)	SM(156, 62)	340.0	1.2	29
P	U(238, 92)	SM(153, 62)	70.0	4.6	29

INC. PART	TARGET NUCLEUS	RESIDUAL NUCLEUS	ENERGY (MEV)	SIGMA (MB) EXPERIMENT	REF
P	U(238, 92)	SM(153, 62)	100.0	4.4	29
P	U(238, 92)	SM(153, 62)	150.0	3.1	29
P	U(238, 92)	SM(153, 62)	170.0	1.7 + 0.2	29
P	U(238, 92)	SM(153, 62)	200.0	2.6	29
P	U(238, 92)	SM(153, 62)	250.0	2.6	29
P	U(238, 92)	SM(153, 62)	300.0	2.4	29
P	U(238, 92)	SM(153, 62)	340.0	4.5	29
P	U(238, 92)	SM(153, 62)	340.0	2.0	29
P	U(238, 92)	PM(151, 61)	170.0	2.8 + 0.4	29
P	U(238, 92)	PM(150, 61)	170.0	1.1 + 0.3	29
P	U(238, 92)	PM(149, 61)	170.0	5.4 + 0.8	29
P	U(238, 92)	ND(149, 60)	170.0	5.6 + 0.8	29
P	U(238, 92)	ND(147, 60)	70.0	17.0	29
P	U(238, 92)	ND(147, 60)	100.0	18.0	29
P	U(238, 92)	ND(147, 60)	150.0	12.0	29
P	U(238, 92)	ND(147, 60)	170.0	8.1 + 0.8	29
P	U(238, 92)	ND(147, 60)	200.0	11.3	29
P	U(238, 92)	ND(147, 60)	250.0	11.4	29
P	U(238, 92)	ND(147, 60)	300.0	10.8	29
P	U(238, 92)	ND(147, 60)	340.0	9.7	29
P	U(238, 92)	ND(147, 60)	340.0	33.0	29
P	U(238, 92)	ND(140, 60)	150.0	0.7	29
P	U(238, 92)	ND(140, 60)	200.0	3.4	29
P	U(238, 92)	ND(140, 60)	250.0	7.1	29
P	U(238, 92)	ND(140, 60)	300.0	13.0	29
P	U(238, 92)	ND(140, 60)	340.0	17.0	29
P	U(238, 92)	ND(140, 60)	340.0	4.2	29
P	U(238, 92)	PR(145, 59)	170.0	12.0 + 2.0	29
P	U(238, 92)	PR(143, 59)	70.0	0.36	29
P	U(238, 92)	PR(143, 59)	100.0	2.1	29
P	U(238, 92)	PR(143, 59)	150.0	2.0	29
P	U(238, 92)	PR(143, 59)	170.0	17.0 + 2.0	29
P	U(238, 92)	PR(143, 59)	200.0	1.9	29
P	U(238, 92)	PR(143, 59)	250.0	2.2	29
P	U(238, 92)	PR(143, 59)	300.0	2.3	29
P	U(238, 92)	PR(143, 59)	340.0	13.0	29
P	U(238, 92)	PR(143, 59)	340.0	1.9	29
P	U(238, 92)	PR(142, 59)	170.0	1.6 + 0.2	29
P	U(238, 92)	PR(142, 59)	340.0	7.8	29
P	U(238, 92)	CE(144, 58)	70.0	30.0	29
P	U(238, 92)	CE(144, 58)	100.0	28.0	29
P	U(238, 92)	CE(144, 58)	150.0	18.0	29
P	U(238, 92)	CE(144, 58)	200.0	17.0	29
P	U(238, 92)	CE(144, 58)	340.0	14.0	29
P	U(238, 92)	CE(143, 58)	70.0	36.0	29
P	U(238, 92)	CE(143, 58)	100.0	31.0	29
P	U(238, 92)	CE(143, 58)	150.0	22.0	29
P	U(238, 92)	CE(143, 58)	170.0	16.0 + 2.0	29
P	U(238, 92)	CE(143, 58)	200.0	21.0	29
P	U(238, 92)	CE(143, 58)	250.0	21.0	29
P	U(238, 92)	CE(143, 58)	300.0	23.0	29
P	U(238, 92)	CE(143, 58)	340.0	20.0	29
P	U(238, 92)	CE(141, 58)	70.0	49.0	29
P	U(238, 92)	CE(141, 58)	100.0	51.0	29
P	U(238, 92)	CE(141, 58)	150.0	36.0	29

INC. PART	TARGET NUCLEUS	RESIDUAL NUCLEUS	ENERGY (MEV)	SIGMA (MB) EXPERIMENT	REF
P	U(238, 92)	CE(141, 58)	200.0	36.0	29
P	U(238, 92)	CE(141, 58)	340.0	31.0	29
P	U(238, 92)	LA(141, 57)	170.0	20.4 + 5.0	29
P	U(238, 92)	LA(140, 57)	70.0	8.6	29
P	U(238, 92)	LA(140, 57)	100.0	8.6	29
P	U(238, 92)	LA(140, 57)	150.0	7.9	29
P	U(238, 92)	LA(140, 57)	170.0	5.0 + 1.0	29
P	U(238, 92)	LA(140, 57)	200.0	6.2	29
P	U(238, 92)	LA(140, 57)	250.0	7.3	29
P	U(238, 92)	LA(140, 57)	300.0	7.0	29
P	U(238, 92)	LA(140, 57)	340.0	11.0	29
P	U(238, 92)	LA(140, 57)	340.0	5.5	29
P	U(238, 92)	BA(140, 56)	170.0	21.0 + 2.0	29
P	U(238, 92)	BA(140, 56)	340.0	23.0	29
P	U(238, 92)	BA(139, 56)	170.0	25.0 + 2.0	29
P	U(238, 92)	BA(139, 56)	340.0	43.0	29
P	U(238, 92)	BA(135, 56)	170.0	6.8 + 0.9	29
P	U(238, 92)	CS(136, 55)	170.0	13.0 + 1.0	29
P	U(238, 92)	CS(136, 55)	340.0	5.9	29
P	U(238, 92)	I(134, 53)	170.0	11.0 + 2.0	29
P	U(238, 92)	I(133, 53)	170.0	18.0 + 2.0	29
P	U(238, 92)	I(132, 53)	170.0	16.0 + 4.0	29
P	U(238, 92)	I(131, 53)	170.0	31.0 + 7.0	29
P	U(238, 92)	I(131, 53)	170.0	24.0 + 2.0	29
P	U(238, 92)	I(130, 53)	170.0	12.7 + 2.0	29
P	U(238, 92)	I(128, 53)	170.0	9.4 + 0.2	29
P	U(238, 92)	I(126, 53)	170.0	5.2 + 0.1	29
P	U(238, 92)	I(124, 53)	170.0	1.1 + 0.2	29
P	U(238, 92)	TE(134, 52)	170.0	9.0 + 2.0	29
P	U(238, 92)	TE(132, 52)	170.0	19.0 + 5.0	29
P	U(238, 92)	TE(132, 52)	170.0	9.0 + 0.6	29
P	U(238, 92)	TE(131, 52)	170.0	3.0 + 1.0	29
P	U(238, 92)	TE(131, 52)	170.0	7.9 + 3.0	29
P	U(238, 92)	TE(131, 52)	340.0	5.9	29
P	U(238, 92)	SB(131, 51)	170.0	7.9 + 3.0	29
P	U(238, 92)	SB(127, 51)	170.0	19.0 + 6.0	29
P	U(238, 92)	SB(124, 51)	170.0	2.2 + 0.3	29
P	U(238, 92)	CD(115, 48)	340.0	12.0	29
P	U(238, 92)	CD(115, 48)	340.0	34.0	29
P	U(238, 92)	AG(117, 47)	340.0	48.5	29
P	U(238, 92)	AG(111, 47)	170.0	53.0 + 44.0	29
P	U(238, 92)	AG(110, 47)	170.0	2.0 + 1.0	29
P	U(238, 92)	PD(112, 46)	170.0	50.0 + 12.0	29
P	U(238, 92)	PD(112, 46)	340.0	5.2	29
P	U(238, 92)	PD(111, 46)	340.0	39.0	29
P	U(238, 92)	PD(109, 46)	340.0	4.5	29
P	U(238, 92)	RU(106, 44)	170.0	50.0 + 12.0	29
P	U(238, 92)	RU(106, 44)	340.0	52.0	29
P	U(238, 92)	RU(105, 44)	170.0	56.0 + 7.0	29
P	U(238, 92)	RU(103, 44)	170.0	43.0 + 12.0	29
P	U(238, 92)	RU(103, 44)	340.0	42.0	29
P	U(238, 92)	MO(99, 42)	70.0	71.0	29
P	U(238, 92)	MO(99, 42)	100.0	69.0	29
P	U(238, 92)	MO(99, 42)	150.0	55.0	29
P	U(238, 92)	MO(99, 42)	170.0	56.0 + 6.0	29

INC. PART	TARGET NUCLEUS	RESIDUAL NUCLEUS	ENERGY (MEV)	SIGMA (MB) EXPERIMENT	REF
P	U(238, 92)	MO(99, 42)	200.0	53.0	29
P	U(238, 92)	MO(99, 42)	250.0	58.0	29
P	U(238, 92)	MO(99, 42)	300.0	62.0	29
P	U(238, 92)	MO(99, 42)	340.0	59.0	29
P	U(238, 92)	NB(97, 41)	170.0	9.0 + 0.9	29
P	U(238, 92)	NB(96, 41)	170.0	3.8 + 0.2	29
P	U(238, 92)	NB(96, 41)	170.0	2.7 + 0.6	29
P	U(238, 92)	NB(95, 41)	170.0	0.47 + 0.06	29
P	U(238, 92)	ZR(97, 40)	170.0	32.0 + 6.0	29
P	U(238, 92)	ZR(95, 40)	170.0	33.0 + 3.0	29
P	U(238, 92)	Y(93, 39)	100.0	49.0	29
P	U(238, 92)	Y(93, 39)	150.0	39.0	29
P	U(238, 92)	Y(93, 39)	170.0	31.1 + 1.1	29
P	U(238, 92)	Y(93, 39)	170.0	49.0 + 2.0	29
P	U(238, 92)	Y(93, 39)	200.0	38.0	29
P	U(238, 92)	Y(93, 39)	250.0	38.0	29
P	U(238, 92)	Y(93, 39)	300.0	38.0	29
P	U(238, 92)	Y(93, 39)	340.0	38.0	29
P	U(238, 92)	Y(92, 39)	170.0	11.9 + 2.0	29
P	U(238, 92)	Y(91, 39)	70.0	27.0	29
P	U(238, 92)	Y(91, 39)	100.0	30.0	29
P	U(238, 92)	Y(91, 39)	150.0	27.0	29
P	U(238, 92)	Y(91, 39)	170.0	2.7 + 0.6	29
P	U(238, 92)	Y(91, 39)	170.0	9.6 + 1.2	29
P	U(238, 92)	Y(91, 39)	200.0	26.0	29
P	U(238, 92)	Y(91, 39)	200.0	3.7	29
P	U(238, 92)	Y(91, 39)	250.0	37.0	29
P	U(238, 92)	Y(91, 39)	300.0	37.0	29
P	U(238, 92)	Y(91, 39)	340.0	32.0	29
P	U(238, 92)	Y(90, 39)	70.0	0.02	29
P	U(238, 92)	Y(90, 39)	100.0	0.11	29
P	U(238, 92)	Y(90, 39)	150.0	0.15	29
P	U(238, 92)	Y(90, 39)	170.0	1.7 + 0.4	29
P	U(238, 92)	Y(90, 39)	170.0	2.4 + 0.2	29
P	U(238, 92)	Y(90, 39)	250.0	3.8	29
P	U(238, 92)	Y(90, 39)	300.0	3.9	29
P	U(238, 92)	Y(90, 39)	340.0	7.2	29
P	U(238, 92)	SR(92, 38)	170.0	6.2	29
P	U(238, 92)	SR(92, 38)	340.0	40.0	29
P	U(238, 92)	SR(91, 38)	170.0	35.0 + 4.0	29
P	U(238, 92)	SR(91, 38)	340.0	38.0	29
P	U(238, 92)	SR(90, 38)	170.0	31.0 + 2.0	29
P	U(238, 92)	SR(90, 38)	170.0	23.0 + 1.0	29
P	U(238, 92)	SR(89, 38)	170.0	31.0 + 2.0	29
P	U(238, 92)	SR(89, 38)	170.0	31.0 + 2.0	29
P	U(238, 92)	SR(89, 38)	340.0	35.0	29
P	U(238, 92)	BR(86, 37)	170.0	2.3 + 0.2	29
P	U(238, 92)	RB(86, 37)	340.0	13.8	29
P	U(238, 92)	BR(84, 35)	340.0	3.3	29
P	U(238, 92)	BR(83, 35)	170.0	5.0 + 0.9	29
P	U(238, 92)	BR(83, 35)	170.0	0.77 + 1.2	29
P	U(238, 92)	BR(83, 35)	340.0	3.8	29
P	U(238, 92)	BR(82, 35)	340.0	1.57	29
P	U(238, 92)	BR(80, 35)	340.0	0.35	29
P	U(238, 92)	SE(83, 34)	340.0	5.1	29

INC. PART	TARGET NUCLEUS	RESIDUAL NUCLEUS	ENERGY (MEV)	SIGMA (MB) EXPERIMENT	REF
P	U(238, 92)	SE(81, 34)	340.0	7.5	29
P	U(238, 92)	AS(78, 33)	170.0	2.5 + 1.0	29
P	U(238, 92)	AS(77, 33)	170.0	5.2 + 0.6	29
P	U(238, 92)	AS(77, 33)	170.0	4.5 + 0.6	29
P	U(238, 92)	AS(76, 33)	170.0	0.6 + 0.2	29
P	U(238, 92)	AS(76, 33)	170.0	0.96 + 0.16	29
P	U(238, 92)	AS(76, 33)	340.0	0.21	29
P	U(238, 92)	AS(74, 33)	170.0	0.034 + 0.004	29
P	U(238, 92)	GE(78, 32)	170.0	6.7 + 2.7	29
P	U(238, 92)	GE(77, 32)	170.0	2.9 + 0.4	29
P	U(238, 92)	GE(73, 32)	170.0	1.95 + 0.12	29
P	U(238, 92)	GA(72, 32)	170.0	0.53 + 0.06	29
P	U(238, 92)	ZN(72, 30)	340.0	2.1	29
P	U(238, 92)	CU(67, 29)	170.0	0.96 + 0.16	29
P	U(238, 92)	CU(67, 29)	340.0	2.1	29
P	U(238, 92)	CU(64, 29)	170.0	0.026 + 0.002	29
P	U(238, 92)	NI(66, 28)	170.0	0.87 + 0.06	29
P	U(238, 92)	NI(66, 28)	340.0	0.63	29
P	U(238, 92)	NI(65, 28)	170.0	0.80 + 0.03	29
P	U(238, 92)	NI(65, 28)	340.0	0.56	29
P	U(238, 92)	FE(59, 26)	340.0	0.18	29
P	U(238, 92)	NA(24, 11)	340.0	0.05	29
N	AL(27, 13)	MG(27, 12)	370.0	5.1 + 2.0	8
N	AL(27, 13)	NA(24, 11)	370.0	24.4	8
N	AL(27, 13)	F(18, 9)	370.0	6.8 + 2.4	8
N	AL(27, 13)	N(13, 7)	370.0	3.2 + 2.4	8
N	AL(27, 13)	C(11, 6)	370.0	(3.4)	8
N	CU(, 29)	CU(64, 29)	370.0	58.6 + 29.3	8
N	CU(, 29)	CU(62, 29)	370.0	37.1 + 18.55	8
N	CU(, 29)	CU(61, 29)	370.0	15.4 + 7.7	8
N	CU(, 29)	NI(65, 28)	370.0	0.88 + 0.44	8
N	CU(, 29)	NI(57, 28)	370.0	0.54 + 0.27	8
N	CU(, 29)	CO(61, 27)	370.0	3.78 + 1.89	8
N	CU(, 29)	CO(58, 27)	370.0	23.2 + 11.6	8
N	CU(, 29)	CO(58, 27)	370.0	49.0 + 24.5	8
N	CU(, 29)	CO(55, 27)	370.0	0.415 + 0.2075	8
N	CU(, 29)	FE(59, 26)	370.0	2.44 + 1.22	8
N	CU(, 29)	FE(53, 26)	370.0	1.24 + 0.62	8
N	CU(, 29)	FE(52, 26)	370.0	0.134 + 0.067	8
N	CU(, 29)	MN(56, 25)	370.0	2.81 + 1.405	8
N	CU(, 29)	MN(52, 25)	370.0	4.68 + 2.34	8
N	CU(, 29)	MN(51, 25)	370.0	0.76 + 0.38	8
N	CU(, 29)	CR(49, 24)	370.0	0.35 + 0.175	8
N	CU(, 29)	TI(45, 22)	370.0	0.0078 + 0.0039	8
N	PB(206, 82)	PB(204, 82)	20.0	245.0	52
N	PB(206, 82)	PB(204, 82)	24.0	325.0	52
PI -	C(12, 6)	C(11, 6)	53.0	1.0 + 1.0	53
PI -	C(12, 6)	C(11, 6)	60.0	9.0 + 2.0	53
PI -	C(12, 6)	C(11, 6)	80.0	38.0 + 4.0	53
PI -	C(12, 6)	C(11, 6)	127.0	59.0 + 5.0	53
PI -	C(12, 6)	C(11, 6)	179.0	68.0 + 6.0	53
PI -	C(12, 6)	C(11, 6)	212.0	67.0 + 6.0	53
PI -	C(12, 6)	C(11, 6)	245.0	61.0 + 6.0	53
PI -	C(12, 6)	C(11, 6)	304.0	41.0 + 4.0	53

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