

# Probabilistic Energy and Durability Assessment in Buildings Design



Friday

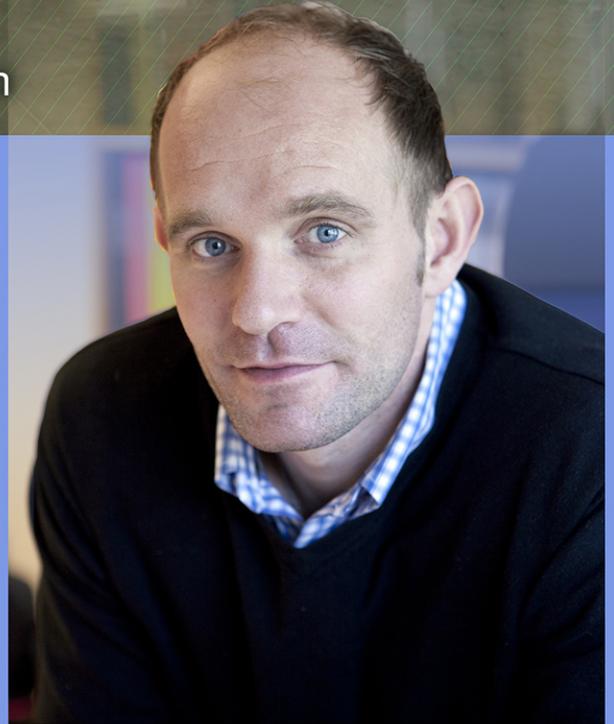
May 30, 2014

1:00 p.m.–2:00 p.m.

Building 5100, JICS Auditorium

### Abstract

The energy and durability performance of buildings depends on a number of parameters: outdoor climate; indoor heat and moisture generation; characteristics of the heating, ventilation, and air-conditioning system; natural ventilation; material and surface properties; and occupant behavior. Usually, the prospective energy and durability performance of a building design is evaluated based on fixed values of these parameters. Consequently, the results of a traditional energy and durability assessment can provide an estimate that varies greatly from reality. A probabilistic approach though, takes into account the variability in parameters and thus enables a more realistic assessment. This presentation focuses on the importance of probabilistic assessment for homeowners, contractors, material suppliers, the national economy, and the environment. It will also share experiences from successful case studies and explain what ORNL can gain, and eventually offer, from implementing a probabilistic approach in its buildings research.



## Simon Pallin

is a postdoctoral associate at the ORNL Building Technologies Research and Integration Center. He obtained his undergraduate degree in civil engineering and a master's degree in structural engineering from Chalmers University of Technology in Sweden. He received his PhD from Chalmers in 2013 through his work in risk assessment of energy and moisture performance in residential buildings. He serves as an expert on hygrothermal risk assessment and has conducted detailed studies of residential moisture generation and developed a simulation tool to estimate indoor humidity. He has also developed hygrothermal risk assessment protocols and implemented probabilistic risk assessment methods into computer simulation procedures.