Postdoctoral Researcher: Reduced-order modeling for uncertainty quantification (UQ)

The Center for Exascale Simulation of Plasma-coupled Combustion (XPACC — http://xpacc.illinois.edu) at the University of Illinois at Urbana-Champaign seeks a Postdoctoral Research Associate in the area of reduced-order modeling (ROM) for uncertainty quantification (UQ). Specific tasks will be to:

- Develop ROMs for ignition and combustion in a turbulent flow using data-driven and analytical models (e.g., global modes) based upon higher-fidelity descriptions and simulations,
- Generate physics-based surrogates for quantifying predictive uncertainty,
- Develop model inadequacy descriptions for use in the UQ of the large-scale predictive simulation, and
- Seek ROM error estimates to estimate model-form uncertainty.

Faculty working in this area within XPACC include Jonathan Freund, Daniel Bodony, Luke Olson, and Marco Panesi.

This is a large center-level effort, and there will be tremendous opportunities for leadership and career development within the center. There will also be opportunities for close collaborative interaction with computer scientists, computational scientists, and experimentalists, as well as the international high-performance computing community. Interest and ability to interact productively with our DOE sponsors is essential. The center also includes more senior staff-level personnel, which provides opportunities for promotion within XPACC.

XPACC researchers have access to state-of-the-art computing platforms at all DOE/NNSA labs and the Blue Waters system (https://bluewaters.ncsa.illinois.edu/) at the University of Illinois.

Applicants should have a PhD in a Mechanical or Aerospace Engineering or a related field. A competitive salary will be set in accordance with University of Illinois policy. Appointments will be for 1 year, with the possibility of renewal for additional years.

To apply, email applications in PDF format to xpacc@illinois.edu. These should include a full CV (including publications and details of graduate studies) and at least 3 references. The target start date is November 15, 2015. Please be sure to indicate the specific position to which you are applying.

Center for Exascale Simulation
XPACC
of Plasma-Coupled Combustion