



Postdoctoral Researcher: Numerical analysis for high-order, stencil-based, weak-form discretizations

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 numerical analysis of high-order, stencil-based, weak-form discretization on overset meshes. Specific tasks will be to

- Design, analyze, and implement discretizations with rigorous properties concerning stability and high-order accuracy that are compatible with a computational architecture based on stencils and overlapping structured meshes,
- Leverage these discretizations for flow simulation and elliptic solves,
- Investigate numerical and approximation issues arising from inter-mesh interpolation and coupling with particles, including those arising from non-polynomial bases such as B-splines,
- Explore the co-design space of numerical approximation and high-performance implementation in conjunction with HPC-aligned center personnel, and
- Work with center personnel to implement in the center's principal prediction framework.

Faculty working in this area within XPACC include Luke Olson, Andreas Kloeckner, and Jonathan Freund.

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 opportunity 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://bluwaters.ncsa.illinois.edu/>) at the University of Illinois.

Applicants should have a PhD in a Applied Mathematics, Computer Science, or a related field. A competitive salary will be set in accordance with University of Illinois policy. Initial 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.

Illinois is an equal opportunity employer and all qualified applicants will receive consideration for employment without regard to race, religion, color, national origin, sex, age, status as a protected veteran, or status as a qualified individual with a disability. Illinois welcomes individuals with diverse backgrounds, experiences, and ideas who embrace and value diversity and inclusivity (www.inclusiveillinois.illinois.edu).

