



## Postdoctoral Researcher: Flexible programming models for multihardware performance

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 flexible GPU programming for multihardware performance. One of the Center's main goals is to develop software tools to enable computational science applications to run on extreme scale, heterogeneous computing systems characterized by vendor-specific combinations of multi- and manycore sockets, including GPGPUs, Intel Xeon Phi (KNC and KNL), and ARM-based chips, from a single codebase. Specific tasks will be to:

- Develop and implement strategies for realizing code performance on currently available heterogeneous computers fitted with multi-core CPUs and some combination of GPGPUs (*e.g.* Blue Waters described below) and/or Intel Xeon Phi MICs,
- Develop flexible programming models for the future accelerator-based architectures expected comprise exascale systems, and
- Implement and demonstrate the performance of the multihardware programming model applied to the Center's primary application code, in concert with other Center-developed performance tools (tiling, vectorization, just-in-time compilation, over-decomposition).

Faculty working in this area within XPACC include Wen-Mei Hwu, Bill Gropp, and Daniel Bodony.

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

Applicants should have a PhD in a Computer Science 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](mailto: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](http://www.inclusiveillinois.illinois.edu)).

