



THE UNIVERSITY OF CHICAGO

Departments of Computer Science, Mathematics, Statistics and the Computation Institute
SCIENTIFIC AND STATISTICAL COMPUTING SEMINAR

MATT KNEPLEY

Department of Computational and Applied Mathematics
Rice University

Special Seminar

The Role of Computer Science in Computational Mathematics

TUESDAY, May 30, 2017 at 12:15 PM

Ryerson 277, 1100 E. 58th Street

Host: Ridgway Scott

ABSTRACT

Computational Mathematics is the study of algorithms, appropriate for current computing hardware, used to solve scientific and engineering problems. It draws from both mathematics, for the development of consistent abstractions, and computer science, in which abstraction is used to control program complexity, to create lasting software artifacts which are both efficient and extensible (generalizable). The computational mathematician may focus on algorithm development, improving the accuracy, efficiency, scalability, or robustness of a given strategy. However, it is equally important to consider the software implementation, and its extensibility or generalizability, maintainability, and performance. I will speak about the DMPLex topological interface, part of the PETSc library, which abstracts unstructured meshes of many types as a CW-complex. Illustrating its clarity and effectiveness, I will focus on PETSc examples employing the finite element method.

Contact Ridgway Scott (ridg@uchicago.edu) if you would like to meet with the speaker.

Organizers:

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