University of Rochester
Department of Electrical and Computer Engineering
Colloquia Series

Current Trends in Parallel Numerical Computing and Challenges

Dr. Jack Dongarra
University of Tennessee and
Oak Ridge National Laboratory

Wednesday, October 29th

10:30 AM – 11:30 PM
Rush Rhees Library
Hawkins – Carlson Reading Room

(Enter through glass doors around the corner on right hand side)

Abstract: In this talk we examine how high performance computing has changed over the last 10-year and look toward the future in terms of trends. These changes have had and will continue to have a major impact on our numerical scientific software. A new generation of software libraries and algorithms are needed for the effective and reliable use of (wide area) dynamic, distributed and parallel environments. Some of the software and algorithm challenges have already been encountered, such as management of communication and memory hierarchies through a combination of compile--time and run--time techniques, but the increased scale of computation, depth of memory hierarchies, range of latencies, and increased run--time environment variability will make these problems much harder.

Bio: Jack Dongarra holds an appointment at the University of Tennessee, Oak Ridge National Laboratory, and the University of Manchester. He specializes in numerical algorithms in linear algebra, parallel computing, use of advanced-computer architectures, programming methodology, and tools for parallel computers. He was awarded the IEEE Sid Fernbach Award in 2004; in 2008 he was the recipient of the first IEEE Medal of Excellence in Scalable Computing; in 2010 he was the first recipient of the SIAM Special Interest Group on Supercomputing's award for Career Achievement; in 2011 he was the recipient of the IEEE IPDPS Charles Babbage Award; and in 2013 he received the ACM/IEEE Ken Kennedy Award. He is a Fellow of the AAAS, ACM, IEEE, and SIAM and a member of the National Academy of Engineering.

Light refreshments will be provided.