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# SCHOOL OF NATURAL SCIENCES
# APPLIED MATHEMATICS SEMINAR 291

## Iterative, Multi-level, and Time-Parallel Methods for Temporal Integration of Complex PDEs

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Date: **4/14/17**
Time: **3:00 PM**
Location: **COB 110**

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## ABSTRACT

I will explain how current trends in super computer architectures, due to the breakdown of Dennard scaling, are spurring research into new approaches for the temporal integration of partial differential equations. In particular, there is a need for higher-order methods suitable for problems with multiple physical processes or time scales. In addition, finding methods that can exploit parallelism in the time direction is currently an active research area. I will provide an introduction and overview of research into multilevel, iterative methods for the temporal integration of ODEs, and PDEs based on spectral deferred corrections (SDC) that provide a framework for constructing methods that are both higher-order and provide the potential for temporal parallelism.

## BIO:

Michael received his PhD in Applied Mathematics from the University of California, Berkeley, in 1994 under the supervision of Prof. Alexandre Chorin. After a post-doctoral position at the Courant Institute, NYU, he joined the faculty in the Department of Mathematics at the University of North Carolina - Chapel Hill, where he remained until 2012. Since relocating to the Bay Area in 2012, Michael has been working at LBNL as well as being affiliated with the Institute for Computational and Mathematical Engineering at Stanford University, first as a Consulting Professor and since September 2016 as an Adjunct Professor.