

# **SPECIAL** **APPLIED MATHEMATICS COLLOQUIUM**

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## **Heterogeneous Multi-Scale Methods**

**Abstract:**

Continuum simulations of solids or fluids for which some atomistic information is needed are typical example of multi-scale problems with very large ranges of scales. For such problems, it is necessary to restrict the simulations on the micro-scale to a smaller subset of the full computational domain. The heterogeneous multi-scale method is a framework for developing and analyzing numerical methods that couple computations from very different scales. Local micro-scale simulations on small domains supply missing data to a macro-scale simulation on the full domain. Examples are local molecular dynamics computations that produce data to a continuum macro-scale model, or a highly oscillatory dynamical system for which a local estimate of resonances is enough to supply data for a smoother evolution of averages.

**Tuesday February 26, 2013**  
**4:30PM**  
**Building 2, Room 135**

Applied Math Colloquium: <http://www-math.mit.edu/amc/spring13/>  
Mathematics Department: <http://www-math.mit.edu>



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