

Meeting: 1002, Pittsburgh, Pennsylvania, SS 4A, Special Session on Partial Differential Equations and Applications

1002-35-127 **Shi Jin*** (jin@math.wisc.edu), Department of Mathematics, University of Wisconsin, Madison, WI 53706. *Numerical methods for multiscale kinetic equations.*

I will review several recent methods for kinetic problems where the mean free path has different orders of magnitude. In particular, I will present

1) asymptotic-preserving methods: which solve the kinetic problems with numerical resolution at hydrodynamic scales without using the hydrodynamic equations

2) domain decomposition methods: we provide interface conditions that allow us to couple a kinetic equation with a (hydrodynamic) diffusion equation for numerical computation without using iterations at each time step. (Received September 10, 2004)