1048-65-311 **Jun Jia*** (jiaj@ornl.gov), Oak Ridge National Laboratory, MS-6367, Oak Ridge, TN 37923.
Stable and Spectrally Accurate Schemes for Navier-Stokes Equations.

In this talk, we present an accurate, efficient and stable numerical method for the incompressible Navier-Stokes equations (NSE) with no-slip and open boundary conditions. The method is based on (1) an equivalent pressure Poisson equation formulation of NSE with proper pressure boundary conditions, which facilitates the design of high-order and stable numerical methods, and (2) the Krylov deferred correction (KDC) accelerated method of line transpose (MoL^T), which is very stable, efficient and of arbitrary order in time. Numerical tests with known exact solutions in 3D show that the new method is spectrally accurate in time. 2D computational results of a flow past a cylinder and a flow in a bifurcated tube are also reported. (Received February 10, 2009)