

1125-35-495

**Ramjee P Sharma\***, University of North Georgia, Oakwood, GA 30566, and **Jiahong Wu**, Oklahoma State University, Stillwater, OK 74074. *Numerical computations of 2D Boussinesq equations with fractional dissipation*. Preliminary report.

In this talk we will talk about our recent results from the numerical computation of the following 2D Boussinesq equations with fractional dissipation:

$$\partial_t \omega + u \cdot \nabla \omega = -\nu(-\Delta)^\alpha \omega + \partial_{x_1} \theta, \quad \nu \geq 0, \quad 0 < \alpha \leq 1,$$

$$\partial_t \theta + u \cdot \nabla \theta = -\kappa(-\Delta)^\beta \theta, \quad 0 < \beta \leq 1,$$

$$\nabla \cdot u = 0.$$

Here  $u$  is the velocity field,  $\omega$  is the vorticity field and  $\theta$  is a scalar. We have used parallel pseudospectral method to compute the solutions. These equations model geophysical flows such as atmospheric fronts and ocean circulation. (Received September 04, 2016)