1075-35-68 **Nghiem V. Nguyen*** (nghiem.nguyen@usu.edu), Department of Mathematics and Statistics, Utah State University, 3900 Old Main Hill, Logan, UT 84322-3900, and **Zhi-Qiang Wang**.
Orbital stability of solitary waves of a 3-coupled nonlinear Schrödinger system.

In this talk, consideration is given to the 3−coupled nonlinear Schrödinger system

$$i\frac{\partial}{\partial t}u_j + \frac{\partial^2}{\partial xx}u_j + \sum_{i=1}^{3} b_{ij}|u_i|^2 u_j = 0,$$

where u_j are complex-valued functions of $(x,t) \in \mathbb{R}^2$, $j = 1,2,3$, and b_{ij} are positive constants satisfying $b_{ij} = b_{ji}$. It will be shown first that if the symmetric matrix $B = (b_{ij})$ satisfies certain conditions, then ground-state solutions of the 3−coupled nonlinear Schrödinger system exist, and moreover, they are orbitally stable. The theory is then extended to include solitary waves as well. In particular, it will be shown that when a solitary wave is perturbed, the perturbed solution must stay close to a solitary-wave profile in which the translation and phase parameters are prescribed functions of time. Properties of these functions are then studied. This is a continuous work of our previous paper where the 2−coupled nonlinear Schrödinger system was considered. (Received August 22, 2011)