1106-34-1193 **Petronela Radu**, **Daniel Toundykov** and **Jeremy Trageser*** (s-jtrages1@math.unl.edu).
Finite time blow-up in nonlinear suspension bridge models.

This talk will discuss a paper by P. Radu, D. Toundykov, and J. Trageser that settled a conjecture by Gazzola et al. regarding solutions to the fourth order ODE $w^{(4)} + kw'' + f(w) = 0$ which arises in models of traveling waves in suspension bridges when $k > 0$. Under suitable assumptions on the nonlinearity f and initial data, we demonstrate blow-up in finite time. The case $k \leq 0$ was first investigated by Gazzola et al. Our approach is inspired by Gazzola et al. and exhibits the oscillatory mechanism underlying the finite-time blow-up. This blow-up is non-monotone, with solutions oscillating to higher amplitudes over shrinking time intervals. In the context of bridge dynamics this phenomenon appears to be a consequence of mutually-amplifying interactions between vertical displacements and torsional oscillations. (Received September 11, 2014)