1073-34-215 **Zachary J. Abernathy*** (`abernathyz@winthrop.edu`) and **Jesus Rodriguez**. *On the Solvability of Sturm-Liouville Problems with Non-Local Boundary Conditions.*

In this talk, we establish sufficient conditions for the existence of solutions to the nonlinear differential equation

$$(p(t)x'(t))' + q(t)x(t) + \psi(x(t)) = G(x(t))$$

subject to general non-local boundary conditions of the form

$$\begin{cases} \alpha x(0) + \beta x'(0) + \eta_1(x) = \phi_1(x) \\ \\ \gamma x(1) + \delta x'(1) + \eta_2(x) = \phi_2(x). \end{cases}$$

The results obtained in this talk depend in a crucial way on the relationship between the eigenvalues of a linear Sturm-Liouville problem and the rate of growth of nonlinearities present in both the differential equation and the boundary conditions. (Received August 01, 2011)