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**Zachary J Abernathy\*** ([abernathyz@winthrop.edu](mailto:abernathyz@winthrop.edu)). *Existence of Solutions to a Nonlinear Sturm-Liouville Problem on Time Scales.*

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

$$-(p(t)u^\Delta(t))^\Delta + q(t)u^\sigma(t) = \psi(u^\sigma(t)) + h(t)$$

subject to nonlinear boundary conditions of the form

$$\begin{cases} \alpha u(a) + \beta u^\Delta(a) = \eta_1(u) + v_1 \\ \gamma u(\rho(b)) + \delta u^\Delta(\rho(b)) = \eta_2(u) + v_2. \end{cases}$$

We will emphasize the relationship between the eigenvalues of a related linear Sturm-Liouville problem and the rate of growth of nonlinearities present in both the differential equation and boundary conditions. The use of an arbitrary time scale allows us to unify and generalize previous existence results for Sturm-Liouville problems in continuous and discrete settings. (Received September 13, 2016)