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Britney Hopkins* (bhoptkins3@uco.edu), University of Central Oklahoma, Department of Mathematics and Statistics, 100 N. University Dr., Edmond, OK 73034. *Multiplicity of Positive Solutions for a Fourth-order Nonhomogeneous Boundary Value Problem.*

In this talk, we focus on the existence of multiple positive solutions for the fourth order difference equation, $\Delta^4 u(t-2) = \lambda h(t, u(t), \Delta^2 u(t-1))$, $t \in (0, N+2)_{\mathbb{Z}}$ satisfying the boundary conditions, $u(0) = 0$, $\Delta^2 u(-1) = 0$, $u(N+2) = a$, and $\Delta^2 u(N+1) = -b$, where $a, b, \lambda \geq 0$, $a+b > 0$, and $h : [0, N+2]_{\mathbb{Z}} \times [0, \infty) \times (-\infty, 0] \rightarrow [0, \infty)$. We transform the even order boundary value problem into a system of second order difference equations satisfying homogeneous boundary conditions. Then, by applying the Guo-Krasnosel'skii Fixed Point Theorem several times, we show the existence of multiple positive solutions. (Received August 23, 2009)