

1161-34-277

**Paul W. Eloe** and **Jeffrey T. Neugebauer\***, jeffrey.neugebauer@eku.edu. *Smallest Eigenvalues for Boundary Value Problems of Two Term Fractional Differential Operators Depending on Fractional Boundary Conditions.*

Let  $n \geq 2$  be an integer. Let  $n - 1 < \alpha \leq n$ . We consider eigenvalue problems for two point  $n - 1, 1$  boundary value problems of the form

$$\begin{aligned} D_{0+}^{\alpha}u + a(t)u + \lambda p(t)u &= 0, & 0 < t < 1, \\ u^{(i)}(0) = 0, \quad i = 0, 1, \dots, n - 2, & \quad D_{0+}^{\beta}u(1) = 0, \end{aligned}$$

where  $0 \leq \beta \leq n - 1$  and  $D_{0+}^{\alpha}$  denotes the standard Riemann-Liouville differential operator. We prove the existence of smallest positive eigenvalues and then obtain comparisons of these smallest eigenvalues as functions of  $p$  and of  $\beta$ . (Received August 18, 2020)