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**Benjamin L Jeffers\*** (bjeffers@trinity.edu), 8121 SW 47th ave, Portland, OR 97219, and  
**Jeffery W Lyons.** *On the solutions of the variational equation for an  $n^{\text{th}}$  order boundary value problem with an integral boundary condition.*

In this paper, we discuss differentiation of solutions for the boundary value problem  $y^{(n)} = f(x, y, y', y'', \dots, y^{(n-1)})$ ,  $a < x < b$ ,  $y^{(i)}(x_j) = y_{ij}$ ,  $0 \leq i \leq m_j$ ,  $1 \leq j \leq k-1$ , and  $y^{(i)}(x_k) + \int_c^d py(x) dx = y_{ik}$ ,  $0 \leq i \leq m_k$  with respect to the boundary data. We show that under certain conditions partial derivatives of the solution  $y(x)$  of the boundary value problem with respect to various boundary condition parameters exist and solve the associated variational equation along  $y(x)$ . (Received August 04, 2020)