

# A Green's function for a Two-Term Second Order Differential Operator

Mohammed Aldandani

University of Dayton

**Abstract:**

A series representation of the Green's function associated with the boundary value problem,

$$\begin{aligned} -u''(t) &= a(t)u = w(t)f(t, u(t)), 0 < t < 1, \\ u(0) &= 0, \quad u'(1) = 0, \end{aligned}$$

is constructed. Sufficient conditions on  $a$  are given such that the series representation converges absolutely and uniformly. An application of the contraction mapping principle is given to provide sufficient conditions for the existence and uniqueness of solutions of the boundary value problem.