1023-35-1569   **Dawn Alisha Lott*** (`dlott@desu.edu`), Delaware State University, 1200 N. DuPont Highway, Dover, DE 19901, and **Patrice Danielle Green** (`pgreen001@desu.edu`), Delaware State University, 1200 N. DuPont Highway, Dover, DE 19901. *On the use of second order finite difference approximations to determine plate deflections.*

We consider the numerical solution of the partial differential equation

$$\frac{\partial^4 w}{\partial x^4} + 2\frac{\partial^4 w}{\partial x^2 \partial y^2} + \frac{\partial^4 w}{\partial y^4} = \frac{p - kw}{D}$$

governing the bending of an rectangular plate on an elastic foundation. The deflection w of the rectangular plate is subjected to a load p per unit surface area and reaction q with flexural rigidity D. The problem is approximated using finite difference methods to second order and the difficulty in finding the appropriate difference approximations as well as the treatment of boundary conditions is discussed. (Received September 26, 2006)