1067-Z1-732   **Adam F Childers*** (`childers@roanoke.edu`), MCSP Department, 221 College Lane, Salem, VA 24153. *D-Optimal Designs for Models Described by Ordinary Differential Equations.*

In general finding a D-optimal design when the number of data points is large is a very complicated optimization problem to solve. The difficulty increases even more when restrictions on the relationships between the samples, such as minimum intervals between samples, are imposed. G.E.P. Box and Lucas were the first to use D-optimal designs for non-linear models and began their work for the case when the number of sample points is the same as the number of parameters. They solved the problem geometrically by investigating the design space. Lucas expanded on this idea for the case N>p, the number of sample points N is greater than the dimension of the parameter p, and found that repeated samples at the optimal points for the case N=p were optimal or near optimal for many models. In this paper we generalize these findings so they can be applied to models described by ordinary differential equations and show how the results can be applied to design problems. (Received September 14, 2010)