1014-49-220 **Gamal N Elnagar*** (gelnagar@uscupstate.edu), University of South Carolina Upstate, Department of Mathematics, 800 University way, Spartanburg, SC 29303. *Nonlinear Periodic Optimal Control: A pseudospectral Fourier Approach.*

A pseudospectral method for generating optimal trajectories of the class of periodic optimal control problems is proposed. The method consists of representing the solution of the problem by the n-th degree trigonometric interpolating polynomial, using Fourier nodes as grid points, and then transforing the periodic optimal problem into a nonlinear programming problem.The propose method avoids many of the numerical difficulties typically encounter in solving this class of problems. (Received August 26, 2005)