1023-49-234 **Mohsen Razzaghi*** (razzaghi@math.msstate.edu), Department of Mathematics and Statistics, Mississippi State University, Mississippi State, MS 39762. *Solution of Delay Systems by Orthogonal Functions and Taylor Series.*

Orthogonal functions and Taylor series have received considerable attention in dealing with various problems of dynamic systems. Much progress has been made towards the solution of delay systems. The approach is that of converting the delay-differential equation to an algebraic form through the use of operational matrices of integration and delay. These matrices can be uniquely determined based on the particular choices of basis functions. In the present talk we introduce a computational method to solve delay systems. The method consists of reducing the delay problem to a set of algebraic equations by first expanding the candidate function as a hybrid function with unknown coefficients. These hybrid functions, which consists of block-pulse functions plus Taylor series are first given. The operational matrices of integration, delay and product are then used to evaluate the coefficients of the hybrid function for the solution of delay systems. Illustrative examples are included to demonstrate the validity and applicability of the technique. (Received August 29, 2006)