1116-41-630 **Mohsen Razzaghi*** (razzaghi@math.msstate.edu), Department of Mathematics and Statistics, Allen Hall, Mississippi State, 39762. *Taylor series, and hybrid functions approximations for dynamical systems.*

Orthogonal functions and Taylor series, often used to represent an arbitrary time function, have recently been used to solve various problems of the dynamical systems. The main advantage of using orthogonal functions and Taylor series is that they reduce the dynamical systems problems to those of solving a system of algebraic equations.

In the present work, the Taylor series is first used to find the numerical solution of variational problems. It will be shown that to obtain the solution by using Taylor series, we need to use an ill conditioned matrix and hence, the applications of Taylor series are not satisfactory. To overcome this difficulty, we use the hybrid of block-pulse and Legendre polynomials. A numerical example is included to demonstrate the validity and applicability of the technique, and a comparison is made with existing results. (Received September 09, 2015)