1067-65-457   **Zhimin Zhang*** (`zzhang@math.wayne.edu`), 656 West Kirby, Detroit, MI 48202, and **Nairat Kanyamee**. *Spectral Collocation/p-Version Finite Element Methods for Hamiltonian Dynamical Systems.*

We carry out a systematical study of spectral Galerkin methods (or p-version finite element methods) and spectral collocation methods in numerically solving the Hamiltonian dynamical systems. Different strategies including Legendre-Lobatto collocation, Chebyshev-Lobatto collocation, spectral Galerkin/p-version, are discussed and compared, especially with symplectic methods. Numerical tests on some benchmark nonlinear problems are provided. (Received September 04, 2010)