1163-35-775   **Shijun Zheng*** (`szheng@georgiasouthern.edu`), Department of Mathematical Sciences, Georgia Southern University, P.O.Box 8093, Statesboro, GA 30460, and **Ting-Jian Luo** and **Shi-Hui Zhu**. *Stability of Solitary Waves for Higher-order Hamiltonians.*

The soliton phenomenon for higher-order PDE arises in wave propagation in intense laser beams for quasi-particles in magnetic medium as well as vibration of beams modeling. We will mainly address the orbital stability problem for such solitons. We use profile decomposition method to give rigorous construction of ground state solutions as well as the threshold dynamics for the bi-harmonic NLS and rotating Bose-Einstein condensation. The modeling equation can be derived from Noether's theorem. The proof relies on profile decomposition and scaling, translation and rotation invariance that are intrinsic symmetries of the system. Numerical simulations will also be presented. (Received September 12, 2020)