1022-65-61   **Jie Shen** (`shen@math.purdue.edu`), Department of Mathematics, Purdue University, West Lafayette, IN 47907, **Jiahong Wu** (`jiahong@math.okstate.edu`), Department of Mathematics, Oklahoma State University, Stillwater, 74078, and **Juan-Ming Yuan*** (`jmyuan@pu.edu.tw`), Department of Applied Mathematics, Providence University, Taichung, 433, Taiwan. *A dual-Petrov-Galerkin method for the Kawahara-type equation.*

The Kawahara equation is a 5th-order KdV-type equation that models many physical phenomena such as gravity-capillary waves and magneto-sound propagation in plasmas. Dual-Petrov-Galerkin approximations to the Kawahara and modified Kawahara equations are considered. The key idea of this method is to use the trial functions satisfying the underlying boundary considerations of the differential equation and the test functions satisfying the dual boundary conditions. Our theoretical analysis and numerical results indicate that the proposed dual-Petrov-Galerkin method is extremely accurate and efficient. (Received September 08, 2006)