

1131-35-226

Baofeng Feng* (baofeng.feng@utrgv.edu), 213 Baylor Ave, McAllen, TX 78504, and
Yasuhiro Ohta. *Semi-discrete analogues of the complex short pulse and coupled complex short pulse equations based on the KP hierarchy reduction.*

Based on the KP hierarchy reduction method, we construct integrable semi discretizations of the complex short pulse (CSP) and the coupled complex short pulse (CCSP) equations, then apply them for the numerical simulations. Starting from the tau functions of the Kadomtsev-Petviashvili (KP) hierarchy with singular shift points, we firstly derive a set of bilinear equations. Then by dimension and complex conjugate reductions, the integrable semi-discrete analogues of both the CSP and CCSP equations are constructed and their multi-soliton solutions in the form of determinants are provided. In the last, we will show the numerical results of soliton interactions by apply these semi-discretizations as a self-adaptive moving mesh method. (Received July 15, 2017)