

Exact Excitation and Abundant Localized Coherent Soliton Structures of (2+1)-Dimensional Perturbed AKNS System

ZHENG Chun-Long^{1,2,4} and ZHANG Jie-Fang^{2,3}

¹ Department of Physics, Zhejiang Lishui Normal College, Lishui 323000, China

² Institute of Nonlinear Physics, Zhejiang Normal University, Jinhua 321004, China

³ Shanghai Institute of Mathematics and Mechanics, Shanghai University, Shanghai 200072, China

⁴ Department of Physics, Zhejiang University, Hangzhou 310027, China

(Received: 2002-5-10; Revised: 2002-7-5)

Abstract: A simple and direct method is applied to solving the (2+1)-dimensional perturbed Ablowitz-Kaup-Newell-Segur system (PAKNS). Starting from a special Bäcklund transformation and the variable separation approach, we convert the PAKNS system into the simple forms, which are four variable separation equations, then obtain a quite general solution. Some special localized coherent structures like fractal dromions and fractal lumps of this model are constructed by selecting some types of lower-dimensional fractal patterns.

PACS: 03.40.Kf, 02.30.Jr, 03.65.Ge, 05.45.Yv

Key words: variable separation approach, perturbed AKNS system, exact solution, coherent structure

[\[Full text: PDF\]](#)

Close