

Fission and Fusion of Localized Coherent Structures for a Higher-Order Broer-Kaup System

MA Zheng-Yi¹ and ZHENG Chun-Long^{1,2}

¹ Department of Mathematics , Zhejiang Lishui University, Lishui 323000, China

² Shanghai Institute of Applied Mathematics and Mechanics, Shanghai University, Shanghai 200072, China

(Received: 2004-8-10; Revised:)

Abstract: Starting from a Bäcklund transformation and taking a special ansatz for the function f , we can obtain a much more general expression of solution that includes some variable separated functions for the higher-order Broer-Kaup system. From this expression, we investigate the interactions of localized coherent structures such as the multi-solitonic excitations and find the novel phenomenon that their interactions have non-elastic behavior because the fission/fusion may occur after the interaction of each localized coherent structure.

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

Key words: higher-order Broer-Kaup system, variable separation approach, Bäcklund transformation, soliton fission, soliton fusion

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

Close