

A Novel Class of Localized Excitations for the (2+1)-Dimensional Higher-Order Broer-Kaup System

Cheng-lin Bai and Hong Zhao

Physics Science and Information Engineering School, Liaocheng University,
Liaocheng 252059, China

Reprint requests to Dr. C. B.; E-mail: lcced_bcl@sina.com

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By applying a special Bäcklund transformation, a general variable separation solution for the (2+1)-dimensional higher-order Broer-Kaup system is derived. In addition to some types of the usual localized excitations, such as dromions, lumps, ring solitons, oscillated dromions and breathers, soliton structures can be easily constructed by selecting arbitrary functions appropriately. A new class of localized structures, like fractal-dromions, fractal-lumps, peakons, compactons and folded excitations of this system is found by selecting appropriate functions. Some interesting novel features of these structures are revealed. — PACS numbers: 05.45.-a, 02.30.Jr, 02.30.Ik.

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