Abundant Coherent Structures of the (2+1)-dimensional Broer-Kaup-Kupershmidt Equation

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By using of the Bäcklund transformation, which is related to the standard truncated Painlevé analysis, some types of significant exact soliton solutions of the (2+1)-dimensional Broer-Kaup-Kupershmidt equation are obtained. A special type of soliton solutions may be described by means of the variable coefficient heat conduction equation. Due to the entrance of infinitely many arbitrary functions in the general expressions of the soliton solution the solitons of the (2+1)-dimensional Broer-Kaup equation possess very abundant structures. By fixing the arbitrary functions appropriately, we may obtain some types of multiple straight line solitons, multiple curved line solitons, dromions, ring solitons and etc.

Key words: Bäcklund Transformation; (2+1)-dimensional Broer-Kaup-Kupershmidt Equation; Dromion Solution; Ring Solitons.