Abundant New Multiple Soliton-like Solutions and Rational Solutions of the (2+1)-Dimensional Broer-Kaup Equation

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Z. Naturforsch. **56 a,** 816–824 (2001); received June 25, 2001

In this paper we firstly improve the homogeneous balance method due to Wang, which was only used to obtain single soliton solutions of nonlinear evolution equations, and apply it to (2+1)-dimensional Broer-Kaup (BK) equations such that a Backlund transformation is found again. Considering further the obtained Backlund transformation, the relations are deduced among BK eqautions, well-known Burgers equations and linear heat equations. Finally, abundant multiple soliton-like solutions and infinite rational solutions are obtained from the relations.

Key words: (2+1)-dimensional Broer-Kaup equation; Backlund Transformation; Burgers Equation; Soliton Solution; Rational solution.