

Symbolic Computation and Construction of Soliton-Like Solutions to the (2+1)-Dimensional Breaking Soliton Equation

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Abstract: Based on the computerized symbolic system Maple, a new generalized expansion method of Riccati equation for constructing non-travelling wave and coefficient functions' soliton-like solutions is presented by a new general ansatz. Making use of the method, we consider the (2+1)-dimensional breaking soliton equation, $u_t + bu_{xxy} + 4buv_x + 4bu_xv = 0$, $u_y = v_x$, and obtain rich new families of the exact solutions of the breaking soliton equation, including the non-travelling wave and constant function soliton-like solutions, singular soliton-like solutions, and triangular function solutions.

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Key words: generalized expansion method of Riccati equation, symbolic computation, breaking soliton equation, soliton-like solutions, solitons

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