

Coupled Modified Korteweg-de Vries Lattice in (2+1) Dimensions and Soliton Solutions

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Abstract: The coupled semi-discrete modified Korteweg-de Vries equation in (2+1)-dimensions is proposed. It is shown that it can be decomposed into two (1+1)-dimensional differential-difference equations belonging to mKdV lattice hierarchy by considering a discrete isospectral problem. A Darboux transformation is set up for the resulting (2+1)-dimensional lattice soliton equation with the help of gauge transformations of Lax pairs. As an illustration by example, the soliton solutions of the mKdV lattice equation in (2+1)-dimensions are explicitly given.

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Key words: modified Korteweg-de Vries lattice, Darboux transformation, soliton solutions

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