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Multi-linear Variable Separation Approach to Solve a (1+1)-Dimensional Coupled Integrable Dispersionless System

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Abstract: The multi-linear variable separation approach (MLVSA) is very useful to solve (2+1)-dimensional integrable systems. In this letter, we extend this method to solve a (1+1)-dimensional coupled integrable dispersion-less system. Namely, by using a Bäcklund transformation and the MLVSA, we find a new general solution and define a new "universal formula". Then, some new (1+1)-dimensional coherent structures of this universal formula can be found by selecting corresponding functions appropriately. Specially, in some conditions, bell soliton and kink soliton can transform each other, which are illustrated graphically.

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Key words: variable separation approach, (1+1)-dimensional coupled integrable dispersion-less system, coherent structure

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