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# Variable Separation Solutions in (1+1)-Dimensional and (3+1)-Dimensional Systems via Entangled Mapping Approach

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Abstract: In this paper, the entangled mapping approach (EMA) is applied to obtain variable separation solutions of (1+1)-dimensional and (3+1)-dimensional systems. By analysis, we firstly find that there also exists a common formula to describe suitable physical fields or potentials for these (1+1)-dimensional models such as coupled integrable dispersionless (CID) and shallow water wave equations. Moreover, we find that the variable separation solution of the (3+1)-dimensional Burgers system satisfies the completely same form as the universal quantity $U_1$ in (2+1)-dimensional systems. The only difference is that the function q is a solution of a constraint equation and p is an arbitrary function of three independent variables.

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Key words: entangled mapping approach, (1+1)-dimensional systems, (3+1)-dimensional Burgers system

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