

# **(2+1)-Dimensional Davey-Stewartson II Equation for a Two-Dimensional Nonlinear Monatomic Lattice**

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A two-dimensional monatomic lattice with nearest-neighbor interaction is investigated by the method of multiple scales combined with a quasidiscreteness approximation. The Davey-Stewartson II equation (DS-II) is obtained from the original two-dimensional (2D) differential-difference system. By solving the DS-II, explicit periodic solutions, soliton solutions and rational function solutions are obtained, and the leading order approximated solutions of the 2D monatomic lattice are constructed by explicit solutions of the DS-II.

*Key words:* Two-Dimensional Monatomic Lattice; Method of Multiple Scales; Quasi-Discreteness Approximation; Davey-Stewartson II Equation.