

# Interaction between a Line Soliton and a $Y$ -Periodic Soliton in the $(2 + 1)$ -dimensional Nizhnik-Novikov-Veselov Equation

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A variable separation approach is used to obtain exact solutions of the Nizhnik-Novikov-Veselov equation. Some exact solutions of this model are analysed to study the interaction between a line soliton and a  $y$ -periodic soliton. The interactions are classified into several types according to the phase shifts due to the collision. There are two types of singular interactions: One is the resonant interaction that generates one line soliton, while the other is the extremely repulsive or long-range interaction where two solitons interchange infinitely apart. Detailed behaviors of interactions are illustrated both analytically and graphically.

*Key words:* Interaction; Variable Separation Approach; NNV Equation.