Nonlinear Sciences > Exactly Solvable and Integrable Systems

New exact multi line soliton and periodic solutions with constant asymptotic values at infinity of the NVN integrable nonlinear evolution equation via dibar-dressing method

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The classes of exact multi line soliton, periodic solutions and solutions with functional parameters, with constant asymptotic values at infinity u|_{xi^2+eta^2->infty}->-epsilon, for the hyperbolic and elliptic versions of the Nizhnik-Veselov-Novikov (NVN) equation via dibar-dressing method of Zakharov and Manakov were constructed. At fixed time these solutions are exactly solvable potentials correspondingly for one-dimensional perturbed telegraph and two-dimensional stationary Schroedinger equations. Physical meaning of stationary states of quantum particle in exact one line and two line soliton potential valleys was discussed. In the limit epsilon->0 exact special solutions u^{1}, u^{2} (line solitons and periodic solutions) were found which sum u^{1}+u^{2} (linear superposition) is also exact solution of NVN equation.

Comments:	43 pages, 28 figures, 25 references More exactly specified and concretize all figures, captions and explanations for these figures. The number of figures changed from 36 (in old version) to 28 (in new version)
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