Nonlinear Sciences > Exactly Solvable and Integrable Systems

`Interpolating' differential reductions of multidimensional integrable hierarchies

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We transfer the scheme of constructing differential reductions, developed recently for the case of the Manakov-Santini hierarchy, to the general multidimensional case. We consider in more detail the four-dimensional case, connected with the second heavenly equation and its generalization proposed by Dunajski. We give a characterization of differential reductions in terms of the Lax-Sato equations as well as in the framework of the dressing method based on nonlinear Riemann-Hilbert problem.

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