



Differential-difference equations associated with the fractional Lax operators

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We study integrable hierarchies associated with spectral problems of the form $P\psi = \lambda Q\psi$ where P, Q are difference operators. The corresponding nonlinear differential-difference equations can be viewed as inhomogeneous generalizations of the Bogoyavlensky type lattices. While the latter turn into the Korteweg--de Vries equation under the continuous limit, the lattices under consideration provide discrete analogs of the Sawada--Kotera and Kaup--Kupershmidt equations. The R -matrix formulation and several simplest explicit solutions are presented.

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