A Discrete Spectral Problem and Related Hierarchy of Discrete Hamiltonian Lattice Equations

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(Received: 2006-8-28; Revised:)

Abstract: Staring from a discrete matrix spectral problem, a hierarchy of lattice soliton equations is presented though discrete zero curvature representation. The resulting lattice soliton equations possess non-local Lax pairs. The Hamiltonian structures are established for the resulting hierarchy by the discrete trace identity. Liouville integrability of resulting hierarchy is demonstrated.

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