2004 Vol.41 No.3 pp.321-328 DOI:

A Hierarchy of Lax Integrable Lattice Equations, Liouville Integrability and a New Integrable Symplectic Map

XU Xi-Xiang[1] and ZHANG Yu-Feng[2]

[1] Department of Basic Courses, Shandong University of Science and Technology, Taian 271019, China
[2] Institute of Mathematics, School of Information Science and Engineering, Shandong University of Science and Technology, Taian 271019, China
(Received: 2003-3-28; Revised: 2003-6-24)

Abstract: A discrete matrix spectral problem and the associated hierarchy of Lax integrable lattice equations are presented, and it is shown that the resulting Lax integrable lattice equations are all Liouville integrable discrete Hamiltonian systems. A new integrable symplectic map is given by binary Bargmann constraint of the resulting hierarchy. Finally, an infinite set of conservation laws is given for the resulting hierarchy.

PACS: 02.30.Ik,
Key words: lattice soliton equation, discrete Hamiltonian system, Liouville integrability, nonlinearization, symplctic map, conservation law

[Full text: PDF]

Close