COMPLETE INTEGRABILITY OF DISCRETE NONLINEAR SYSTEMS

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Abstract

According to the authors approach, the Complete Integrability of many continuous nonlinear systems is based on the factorization property of important underlying 1D and 2D linear operators. This property should be preserved in the process of discretization. The following fundamental examples will be considered: 1D and 2D Toda Lattices and their various discretizations; Discretization of the 2D Schrödinger Operators and the specific role of the equilateral triangle lattice; Discretization of Complex Analysis and Geometric Connections.