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Vector loop algebra and its applications to integrable system. (English) Zbl 1106.37045
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Summary: We propose a vector loop algebra and its extended loop algebra to obtain the dispersive long wave (DLW) hierarchy. By making use of the extended trace identity and the quadratic-form identity, the Hamiltonian structures of the DLW hierarchy and its integrable coupling are constructed, respectively.

MSC:

37K10 Completely integrable infinite-dimensional Hamiltonian and Lagrangian systems, integration methods, integrability tests, integrable hierarchies (KdV, KP, Toda, etc.)

Cited in 8 Documents

37K30 Relations of infinite-dimensional Hamiltonian and Lagrangian dynamical systems with infinite-dimensional Lie algebras and other algebraic structures

Keywords:

dispersive long wave hierarchy; Hamiltonian structure; integrable coupling

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