

From pencils of Novikov algebras of Stäckel type to soliton hierarchies

In this prentation we construct evolutionary soliton hierarchies from pencils of Novikov algebras of Stäckel type. We start by defining a special class of associative Novikov algebras, which we call Novikov algebras of Stäckel type, as they are associated with classical Stäckel metrics in Viète co-ordinates. We obtain sufficient conditions for pencils of these algebras so that the corresponding Dubrovin-Novikov Hamiltonian operators can be centrally extended, producing sets of pairwise compatible Poisson operators. These operators lead to coupled Korteweg-de Vries (cKdV) and coupled Harry Dym (cHD) hierarchies, as well as to a triangular cKdV hierarchy and a triangular cHD hierarchy.

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