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The two types of gauge transformation for the $q$-KP hierarchy. (Chinese. English summary)

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Summary: Two types of gauge transformation $T_D$ and $T_I$ for the $q$-KP hierarchy are discussed. We mainly investigate the products of $n$ terms of $T_D$ and $k$ terms of $T_I$ in the case for $n < k$, and give the corresponding determinant representation of the gauge transformations.

MSC:

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

37K35 Lie-Bäcklund and other transformations for infinite-dimensional Hamiltonian and Lagrangian systems

Keywords:

$q$-derivative; $q$-KP hierarchy; gauge transformation; eigenfunctions; adjoint eigenfunctions; $q$-Wronskian determinant