

Integral-Type Darboux Transformations for the mKdV Hierarchy with Self-Consistent Sources

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Abstract: We present integral-type Darboux transformation for the mKdV hierarchy and for the mKdV hierarchy with self-consistent sources. In contrast with the normal Darboux transformation, the integral-type Darboux transformations can offer non-auto-Bäcklund transformation between two $(2n+1)$ -th mKdV equations with self-consistent sources with different degrees. This kind of Darboux transformation enables us to construct the N-soliton solution for the mKdV hierarchy with self-consistent sources. We also propose the formulas for the m times repeated integral-type Darboux transformations for both mKdV hierarchy and mKdV hierarchy with self-consistent sources.

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Key words: integral-type Darboux transformation, mKdV hierarchy with self-consistent sources, Lax representation, N-soliton solution

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