On recursion operators for the Sasa-Satsuma and complex sine-Gordon II equations

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Abstract

We present a new symplectic structure and a hereditary recursion operator for the Sasa-Satsuma equation which is widely used in nonlinear optics. Using an integrodifferential substitution relating this equation to a third-order symmetry flow of the complex sine-Gordon II equation enabled us to find a hereditary recursion operator and higher Hamiltonian structures for the latter equation. We also show that both the Sasa-Satsuma equation and the third-order symmetry flow for the complex sine-Gordon II equation are bi-Hamiltonian systems.

References

