Hamiltonians associated with the third and fifth Painlevé equations

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Abstract

We obtain a Painlevé-type differential equation for the simplest rational Hamiltonian associated with the fifth Painlevé equation in the case $\gamma \neq 0$, $\delta = 0$. We prove the existence of Hamiltonians of a nonrational type associated with the fifth Painlevé equation in the case $\gamma \neq 0$, $\delta = 0$. We obtain a generalization of the Garnier and Okamoto formulas for rational Hamiltonians associated with the third Painlevé tequation.

Keywords