Hamiltonians associated with the sixth Painlevé equation

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Abstract

We obtain the formula determining the general form of polynomial Hamiltonians associated with the sixth Painlevé equation and prove its uniqueness. We prove the existence of nonpolynomial Hamiltonians associated with this equation. We identify the Hamiltonian class for which the defining differential equation coincides with the equation (h-equation) for the simplest polynomial Hamiltonian (the Okamoto Hamiltonian).

Keywords