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Alexander Its and **Andrei Prokhorov*** (aprokhor@iupui.edu), 402 North Blackford Street,
LD 270, Indianapolis, IN 46202. *On some Hamiltonian properties of isomonodromic tau functions.*

Painlevé equations are nonlinear ODEs, which appear in random matrix theory, conformal field theory and other places in mathematics and physics. They admit isomonodromic deformations representation and therefore are integrable. Painlevé equations are also equivalent to some Hamiltonian systems.

In 1981 Jimbo Miwa and Ueno introduced the tau function for general isomonodromic deformations. In the case of Painlevé equations the corresponding tau function satisfy σ -form of Painlevé equations. We establish the relation between the Painlevé tau functions and corresponding classical actions. This relation provides differential identities required for asymptotic analysis of tau functions. It turns out that similar identities hold for general isomonodromic tau functions.

Hamiltonian structure for Painlevé equations was established by Okamoto in 1980. We extend it to isomonodromic deformations corresponding to Painlevé equations and we conjecture the Hamiltonian structure for general isomonodromic deformations. (Received August 19, 2018)