Novaes, Fábio; Da Cunha, Bruno Carneiro

Isomonodromy, Painlevé transcendents and scattering off of black holes. (English)

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Summary: We apply the method of isomonodromy to study the scattering of a generic Kerr-NUT-(A)dS black hole. For generic values of the charges, the problem is related to the connection problem of the Painlevé VI transcendent. We review a few facts about Painlevé VI, Garnier systems and the Hamiltonian structure of flat connections in the Riemann sphere. We then outline a method for computing the scattering amplitudes based on Hamilton-Jacobi structure of Painlevé, and discuss the implications of the generic result to black hole complementarity.

MSC:
83C57 Black holes
81T30 String and superstring theories; other extended objects (e.g., branes) in quantum field theory

Keywords:
integrable equations in physics; black holes; black holes in string theory

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