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Logarithmic Painlevé functions and Mathieu stability chart

Monday, June 28, 2021 3:00 PM (40 minutes)

The tau function of Painlevé III_3 equation (parameterless PIII) corresponding to generic monodromy data is known to coincide with the dual Nekrasov-Okounkov partition function and admits explicit combinatorial series representation. I will explain how to derive an analog of this representation for the one-parameter family of non-generic solutions of Painlevé III_3 characterized by the logarithmic asymptotics. I will also discuss a connection between such logarithmic tau functions and the characteristic values of Mathieu equation describing the band structure of the Schroedinger operator with a cosine potential.

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