

Perturbative expansion of the Painlevé τ -functions and topological recursion

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This talk aims at proving that we can introduce a formal small parameter \hbar in the Lax pair formalism associated to all 6 Painlevé equations with arbitrary monodromy parameters. Then we show that one can reconstruct the perturbative series expansion of the Painlevé τ -function with the symplectic invariants computed by applying the topological recursion to the spectral curve of the problem. The proof consists in proving the so-called Topological Type Property of the system thus showing that the determinantal formulas defined by Bergère, Borot and Eynard correspond to the correlation functions computed by the topological recursion.

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