ODTU-Bilkent Algebraic Geometry

Integrable Systems in Symbolic, Numerical and Combinatorial Algebraic Geometry

By

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Abstract: The Kadomtsev-Petviashvili (KP) equation is a universal integrable system that describes nonlinear waves. It is known that algebro-geometric approaches to the KP equation provide solutions coming from a complex algebraic curve, in terms of the Riemann theta function associated with the curve. Reviewing this relation, I will introduce an algebraic object and discuss its algebraic and geometric features: the so-called Dubrovin threefold of an algebraic curve, which parametrizes the solutions. Mentioning the relation of this threefold with the classical algebraic geometry problem, namely the Schottky problem, I will report a procedure that is via the threefold and based on numerical algebraic geometric tools, which can be used to deal with the Schottky problem from the lens of computations. I will finally focus on the geometric behaviour of the threefold when the underlying curve degenerates.

Date: 26 March 2021, Friday
Time: 16:00
Place: Zoom

To request the event link, please send a message to sertoz@bilkent.edu.tr