

34th Brazilian Math. Colloquium

Geometry of Painlevé equations

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Abstract:

The goal of the course is to provide a rather complete description of the foliation associated to the Painlevé VI equation. Painlevé equations form six families of differential equations, the first 5 arising from degenerescence of the 6th one above, with four complex parameters. They were discovered by Painlevé and his students as non linear second order ODE having the Painlevé property: solutions are well-behaved with respect to analytic continuation. These differential equations now arise in many different subjects. Our goal is to focus on the 6th family and explain how this family arise as isomonodromy equation, and then provide a description of its phase portrait in the 3-dimensional space, its compactification, its monodromy, dynamics and asymptotics of solutions.

Prerequisite:

Complex variable, holomorphic functions, basics about ordinary differential equations.