

Isomonodromic deformations of irregular connections and wild mapping class groups

mardi 22 octobre 2024 14:30 (55 minutes)

Via the Riemann-Hilbert correspondence, character varieties can be seen as moduli spaces of monodromy data of meromorphic connections with regular singularities on a Riemann surface. Varying the curve with marked points, this leads to isomonodromic deformations and to the well-known mapping class group actions on character varieties.

This story admits a far-reaching generalization if we do not restrict to regular singularities: we now have to consider moduli spaces of generalized monodromy data, giving rise to wild character varieties. There are then new deformation parameters: the irregular types of the connections at their singularities.

We will discuss some recent work, in collaboration with P. Boalch, G. Rembado, and M. Tamiozzo, where we define and study the spaces of these deformation parameters and their fundamental groups, yielding wild mapping class groups. They act on the wild character varieties by Poisson automorphisms, opening the door to many questions about these wild dynamics.

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