
The Riemann-Hilbert mapping in genus two

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Résumé

One possible formulation of the Riemann-Hilbert problem in higher genus is to ask which is the vector bundle underlying the holomorphic connection over a curve associated to a given monodromy representation. Since the monodromy is given in terms of the topological and not the complex structure of the curve, one may vary the latter and obtains, by the Riemann-Hilbert correspondence, an isomonodromic family of connections. In collaborations with B. Deroin, G. Calsamiglia and F. Loray, we obtained the following result: In the moduli space of irreducible $SL_2(\mathbb{C})$ -connections over genus two curves, the isomonodromic foliation is transversal to the locus of the trivial bundle and transversal to the locus of flat unstable bundles. In this talk, we will present some applications of this result and of its proof.

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