

The Mano Decompositions and the Space of Monodromy Data of the q -Painlevé VI Equation

Thursday, 13 June 2019 16:45 (1 hour)

The talk is based upon a joint work with Y. OHYAMA and J. SAULOY. Classically the space of Monodromy data (or character variety) of PV I (the sixth Painlevé differential equation) is the space of linear representations of the fundamental group of a 4-punctured sphere up to equivalence of representations. If one fixes the local representation data it “is” a cubic surface. We will describe a q -analog: the space of q -Monodromy data of the q -Painlevé VI equation. For the q -analogs of the Painlevé equations (which are non-linear q -difference equations), according to H. SAKAI work, “everything” is well known on the “left side” of the (q -analog of the) Riemann-Hilbert map (the varieties of “initial conditions”), but the “right side” (the q -analogs of the spaces of Monodromy data or character varieties) remained quite mysterious.

We will present a complete description of the space of Monodromy data of q -PVI (some local data being fixed). It is a “modification” of an elliptic surface and we will explicit some “natural” parametrizations. This surface is analytically, but not algebraically isomorphic to the Sakai surface of “initial conditions”. Our description uses a new tool, the Mano decompositions, which are a q -analog of the classical pants decompositions of surfaces. We conjecture that our constructions can be extended to the others q -Painlevé equations. This involves q -Stokes phenomena.

Summary

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