IST AUSTRIA

Institute of Science and Technology

Mathematics and CS Seminar

# Abelianisation of Logarithmic sl(2)-Connections


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**Host: Tamas Hausel**


I will describe an approach to studying meromorphic connections on vector bundles called abelianisation. This technique has its origins in the works of Fock-Goncharov (2006) and Gaiotto-Moore-Neitzke (2013), as well as the WKB analysis. Its essence is to put rank-n connections on a complex curve X in correspondence with much simpler objects: connections on line bundles over an n-fold cover Σ -> X. The point of view is similar in spirit to abelianisation of Higgs bundles, aka the spectral correspondence: Higgs bundles on X are put in correspondence with rank-one Higgs line bundles on a spectral cover Σ -> X. However, unlike Higgs bundles, abelianisation of connections requires the introduction of a new object, which we call the Voros cocycle. The Voros cocycle is a cohomological way to encode objects such as ideal triangulations that appeared in Fock-Goncharov, spectral networks that appeared in Gaiotto-Moore-Neitzke, as well as the connection matrices appearing in the WKB analysis. By focusing our attention on the simplest case of logarithmic singularities with generic residues, I will describe an equivalence of categories, which I call the abelianisation functor, between sl(2)-connections on X satisfying a certain transversality condition and rank-one connections on an appropriate 2-fold spectral cover Σ -> X. This presentation is based on the work completed in my thesis (2018) and recent extensions thereof.


**Thursday, October 18, 2018 01:30pm - 03:30pm**

IST Austria Campus Big Seminar room Ground floor / Office Bldg West (I21.EG.101)

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