

# GEOMETRY

## seminar

### ABELIANISATION OF MEROMORPHIC CONNECTIONS AND THE GEOMETRIC EXACT WKB METHOD

**SPEAKER:** Nikita Nikolaev (Université de Genève)

**DATE:** Wednesday, 14 October 2020 - 15:00

**PLACE:** ONLINE - <https://zoom.us/j/2203382215>

**ABSTRACT:** I will describe an approach to analysing meromorphic connections on Riemann surfaces called abelianisation. It can be seen as a generalisation of the abelianisation of Higgs bundles (a.k.a., the spectral correspondence, a key step in the analysis of Hitchin integrable systems) to flat bundles. This approach emerged in the last decade in the work of Gaiotto, Moore, Neitzke on spectral networks that arise in the context of supersymmetric gauge theories. Our point of view via deformation theory sheds light on the mathematical content of the theory of spectral networks and makes clear the relationship with the spectral correspondence. Furthermore, our mathematical formulation allows us to connect abelianisation with an algebro-geometric formulation of the exact WKB method, which is the modern exact reincarnation of the much older WKB approximation method from quantum mechanics.

