

Integrable systems

**Rapport sur les
contributions**

ID de Contribution: 2

Type: **Non spécifié**

On the $O(n)$ loop model on random maps

mercredi 27 mars 2024 13:30 (1 heure)

Maps are discrete surfaces obtained by gluing polygons, and form a natural model of random geometry. Of particular interest is the study of their large-scale properties, which has been an active field of research for more than 25 years. A major open question is the geometry of maps which are “decorated” by a statistical physics model at a critical point. I will present some results about a specific instance of such model, namely the $O(n)$ loop model on random maps. Based on past and ongoing collaborations with G. Borot, E. Guitter, B. Duplantier, G. Miermont and J. Turunen.

Orateur: BOUTTIER, Jérémie (IMJ - Sorbonne Université)

ID de Contribution: 3

Type: **Non spécifié**

Abelianization of Virasoro conformal blocks at $c=1$

mercredi 27 mars 2024 15:00 (1 heure)

Conformal blocks are essential objects to study in the 2d CFTs. They depend on the data of a vertex algebra \mathcal{CV} , a punctured Riemann surface C , and possible decorations inserted at the punctures. The Virasoro conformal blocks are very interesting since they have many connections to other areas of math and physics. In particular, some very important Virasoro conformal blocks at $c=1$ are also known to be tau functions of some integrable system. I will describe a new way to construct Virasoro conformal blocks at $c=1$. This is closely related to the idea of nonabelianization in the study of $SL(N, \mathbb{C})$ connections by using $GL(1, \mathbb{C})$ connection in the work of Gaiotto-Moore-Neitzke and Neitzke-Hollands. I will talk about our work on relating the $c=1$ Virasoro conformal blocks on C to the “abelian” Heisenberg conformal blocks on a branched double cover of C . The main new idea in our work is the use of the spectral network on the surface C . The nonabelianization construction enables us to study the harder to get Virasoro conformal blocks using the simpler abelian objects. This is joint work in progress with Andrew Neitzke.

Orateur: HAO, Qianyu (Section de Mathématiques - University of Geneva)

ID de Contribution: 4

Type: **Non spécifié**

Computational Algebraic Geometry for Feynman Integrals and their Singularities

mercredi 27 mars 2024 16:30 (1 heure)

Feynman integrals play a central role in particle physics in the theory of scattering amplitudes. In this talk, I will show some examples of how the interplay between algebro-geometric methods and fundamental physics problems leads to advances in both disciplines. In particular, I will discuss vector spaces associated with a family of generalized Euler integrals and the study of their singular locus.

Orateur: FEVOLA, Claudia (INRIA Saclay)