SEMPARIS – Séminaires en région parisienne

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TBA

Lundi 2 Octobre 2023, 10 :30
IHES, Amphithéâtre Léon Motchane
Domaines : math

Titre : *Verlinde Dimension Formula for the Space of Conformal Blocks and the moduli of G-bundles*

Orateur : **Shrawan Kumar (University of North Carolina, Chapel Hill & IHES)**

Résumé : *Let G be a simply-connected complex simple algebraic group and let C be a smooth projective curve of any genus. Then, the moduli space of semistable G-bundles on C admits so called determinant line bundles. E. Verlinde conjectured a remarkable formula to calculate the dimension of the space of generalized theta functions, which is by definition the space of global sections of a determinant line bundle. This space is also identified with the space of conformal blocks arising in Conformal Field Theory, which is by definition the space of coinvariants in integrable highest weight modules of affine Kac-Moody Lie algebras. Various works notably by Tsuchiya-Ueno-Yamada, Kumar-Narasimhan-Ramanathan, Faltings, Beauville-Laszlo, Sorger and Teleman culminated into a proof of the Verlinde formula. The main aim of this talk is to give a basic outline of the proof of this formula derived from the Propogation of Vacua and the Factorization Theorem among others. The proof requires techniques from algebraic geometry, geometric invariant theory, representation theory of affine Kac-Moody Lie algebras, topology, and Lie algebra cohomology. Some basic knowledge of algebraic geometry and representation theory of semisimple Lie algebras will be helpful ; but not required. This lecture should be suitable for any one interested in interaction between algebraic geometry, representation theory, topology and mathematical physics.*