Du
03
MARS.
2021

14h00
-
15h00

RÉGA

Tony Yue Yu - 14h00 - Frobenius structure conjecture and application to cluster algebras.

Zoom
https://zoom.us/j/97172991924?pwd=bVZkRmJKdENUQk4xVGh0VklBRlFvdz09

INSCRIPTION

I will explain the Frobenius structure conjecture of Gross-Hacking-Keel in mirror symmetry, and an application towards cluster algebras. Let U be an affine log Calabi-Yau variety containing an open algebraic torus. We show that the naive counts of rational curves in U uniquely determine a commutative associative algebra equipped with a compatible multilinear form. Although the statement of the theorem involves only elementary algebraic geometry, the proof employs Berkovich non-archimedean analytic methods. We construct the structure constants of the algebra via counting non-archimedean analytic disks in the analytification of U. I will explain various properties of the counting, notably deformation invariance, symmetry, gluing formula and convexity. In the special case when U is a Fock-Goncharov skew-symmetric X-cluster variety, our algebra generalizes, and gives a direct geometric construction of, the mirror algebra of Gross-Hacking-Keel-Kontsevich. The comparison is proved via a canonical scattering diagram defined by counting infinitesimal non-archimedean analytic cylinders, without using the Kontsevich-Soibelman algorithm. Several combinatorial conjectures of GHKK, as well as the positivity in the Laurent phenomenon, follow readily from the geometric description. This is joint work with S. Keel, arXiv:1908.09861. If time permits, I will mention another application towards the moduli space of KSBA (Kollár-Shepherd-Barron-Alexeev) stable pairs, joint with P. Hacking and S. Keel, arXiv: 2008.02299.

INSTITUT HENRI POINCARÉ - UAR839

Sorbonne Université / CNRS
11 rue Pierre et Marie Curie
75231 Paris Cedex 05

HORAIRES

L'institut :
• lundi au vendredi de 8h30 à 18h,
• fermé les jours fériés.

Le musée - Maison Poincaré :
• lundi, mardi, jeudi et vendredi
de 9h30 à 17h30,
• samedi de 10h à 18h,
• fermé le mercredi et le dimanche.