## SEMPARIS – Séminaires en région parisienne

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## TBA

## Mardi 19 Juin 2018, 11 :00

IHES, Centre de conférences Marilyn et James Simons Domaines : hep-th

Titre : Cohomological Hall algebras, vertex algebras and instantons

## Orateur : Yan Soibelman (Kansas State University & IHES)

Résumé : The notion of Cohomological Hall algebra (COHA) was introduced in our joint paper with Maxim Kontsevich 10 years ago. It can be thought of as a mathematical incarnation of the notion of BPS algebra envisioned by physicists Harvey and Moore in the 90's.

Mathematically, COHA is an associative algebra structure on the cohomology of the moduli stack of objects of a 3-dimensional Calabi-Yau category with coefficients in a certain constructible sheaf. Interesting categories can be of geometric or algebraic origin (sheaves on Calabi-Yau 3-folds, quivers with potential, etc.).

In the talk I plan to discuss actions of COHA on the cohomology of certain instanton moduli spaces (spiked instantons of Nekrasov). This gives a relationship of COHA with affine Yangians and more recent "vertex algebras at the corner" introduced by Gaiotto and Rapcak.