מכון ויצמן למדע

THE WEIZMANN INSTITUTE OF SCIENCE

FACULTY OF MATHEMATICS AND COMPUTER SCIENCE

Algebraic Geometry and Representation Theory Seminar

Room 1 ,Ziskind Building
on Tuesday, Sep 10, 2019
at 10:15

note unusual room

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Representations of Coulomb branches and Gelfand-Tsetlin modules

Abstract:

Let g be a Lie algebra of type ADE. To a pair of weights of g (one dominant, the other arbitrary) we associate a group G and a representation N consisting of framed quiver representations of the Dynkin diagram of g. From (G,N) we can construct two varieties. The Higgs branch is the categorical quotient of N by G, which in this case is the Nakajima quiver variety and has been studied for over 25 years. The Coulomb branch has a much more complicated definition that was only recently discovered by Braverman, Finkelberg, and Nakajima. There is a duality between these spaces, which is sometimes referred to as 3d mirror symmetry or symplectic duality.

In this talk I'll try to explain the definition of the Coulomb branch, and why you might care. I will discuss its deformation quantization, which appears naturally from the construction. I'll describe also our recent result which provides an equivalence between representations of the deformation quantisation, and modules over a seemingly very different algebra which is defined combinatorially and arises in categorical representation theory. This equivalence has several interesting consequences, e.g. it provides a classification for the irreducible Gelfand-Tsetlin modules of gl(n), which was previously only known up to n=3.

This talk is based on https://arxiv.org/abs/1806.07519

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