מכון ויצמן למדע

THE WEIZMANN INSTITUTE OF SCIENCE

FACULTY OF MATHEMATICS AND COMPUTER SCIENCE

Algebraic Geometry and Representation Theory Seminar

Room 290C ,Ziskind Building
on Wednesday, Jan 17, 2018
at 11:15

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Semisimplification of tensor categories

Abstract:

We develop the theory of semisimplifications of tensor categories defined by Barrett and Westbury. By definition, the semisimplification of a tensor category is its quotient by the tensor ideal of negligible morphisms, i.e., morphisms f such that Tr(fg)=0 for any morphism g in the opposite direction. In particular, we compute the semisimplification of the category of representations of a finite group in characteristic p in terms of representations of the normalizer of its Sylow p-subgroup. This allows us to compute the semisimplification of the representation category of the symmetric group S_{n+p} in characteristic p, where n=0,...,p-1, and of the Deligne category Rep^{ab} S_t, t in N. We also compute the semisimplification of the category of representations of the Kac-De Concini quantum group of the Borel subalgebra of sl_2. Finally, we study tensor functors between Verlinde categories of semisimple algebraic groups arising from the semisimplification construction, and objects of finite type in categories of modular representations of finite groups (i.e., objects generating a fusion category in the semisimplification).
This is joint work with Victor Ostrik.