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Title: "Super Airy Structures and Super Virasoro Algebras"

Abstract: Matrix models have been studied as a constructive approach to 2d quantum gravity, and topological recursion, as developed by Eynard and Orantin, is a mathematical formalism that recursively computes correlation functions of such models. A bonus is that topological recursion is not only useful for matrix model; it is a powerful computational tool for enumerative invariants. Recently, Kontsevich and Soibelman introduced Airy structures that generalize topological recursion from an algebraic point of view. Since Lie algebras play a crucial role in Airy structures, an interesting question arises; can we further generalize Airy structures by upgrading Lie algebras to Lie superalgebras? In this talk I will first give a brief review of Airy structures and their applications to mathematical physics, and then I will introduce super Airy structures. To conclude, I will construct a set of examples by using $N=1$ vertex operator superalgebras which we expect to work as a bridge among integrable system, enumerative geometry, and physics. This is a joint work in progress with V.

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