A_∞ DEFORMATIONS OF EXTENDED KHOVANOV ARC ALGEBRAS

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Abstract:
Khovanov arc algebras were introduced in Khovanov's seminal work on the categorification of the Jones polynomial. Their quasi-hereditary covers, called extended Khovanov arc algebras, were studied by Stroppel and Brundan-Stroppel in the context of representation theory of Lie algebras where they describe blocks of parabolic category $\mathcal{O}$ and categories of perverse sheaves on Grassmannians. Recently Mak and Smith showed that extended Khovanov arc algebras also naturally complete the symplectic perspective on Khovanov homology. In this talk I will explain how to obtain concrete A_∞ deformations of these algebras. This settles a conjecture by Stroppel on their Hochschild cohomology and suggests several interesting directions for applications in knot and link homology, representation theory and symplectic geometry. This talk is based on `https://arxiv.org/abs/2211.03354` joint with Zhengfang Wang.