Title: Functoriality of odd Khovanov homology and branched double-covers

Abstract: One of the main properties of even Khovanov homology is its functoriality under smooth link cobordisms in $S^3 \times I$. In this talk, I will show that odd Khovanov homology is functorial as well, but only under link cobordisms in $\mathbb{R}^3 \times I$, and a priori only up to sign.

In a second part of the talk, I will describe a new structure on odd Khovanov homology. Specifically, I will show that the reduced odd Khovanov homology of a link L is naturally a module over the exterior algebra of the first homology of the link's branched double-cover. This module structure is related to the odd Khovanov cobordism maps and can sometimes be used to compute them geometrically.

As an application of this module structure, I will show that for dotted ribbon 2-knots, the odd Khovanov-Jacobsson number coincides with the determinant. This result is consistent with predictions from Floer theories and should be true for all 2-knots. We can also prove it for even-twist spun knots, but in this case the proof is different and uses an action of a Temperley-Lieb algebra on the odd Khovanov homology of certain cables.

This is joint work with Jacob Migdail.