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Gordian distance bounds from Khovanov homology

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The Gordian distance u(K,K') between two knots K and K' is the minimal number of crossing changes needed to relate K and K'. The unknotting number u(K) of a knot K arises as the Gordian distance between K and the trivial knot. Rasmussen was the first to find a connection between Khovanov homology and u: his invariant s, extracted from Khovanov homology, yields a lower bound for the slice genus and, as a consequence, for u(K). In this talk, I will introduce a new invariant λ, extracted from a universal version of Khovanov homology. Although it is not connected to the slice genus, λ is a lower bound for u, and in fact the inequality $|s(K)| \leq 2\lambda(K)$ always holds. Moreover, λ displays relations to a generalization of u, the proper rational Gordian distance. This is joint work with L. Lewark and C. Zibrowius.

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