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On the spectrification of Khovanov arc algebras

Leveraging skew Howe duality, we show that Lawson-Lipshitz-Sarkar's spectrification of Khovanov's arc algebra gives rise to 2-representations of categorified quantum groups over $\mathbb{F}_2$ that we call spectral 2-representations. These spectral 2-representations take values in the homotopy category of spectral bimodules over spectral categories. We view this as a step toward a higher representation theoretic interpretation of spectral enhancements in link homology. Following this idea, we hope to use this idea to construct a spectrum whose homology realized the Blanchet-Khovanov algebra. This is an ongoing project with Anne Dranowski, Aaron Lauda, and Andrew Manion.