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Spherical Finite Elements for Lattice Radial Quantization

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Recent efforts have been made to study conformal field theories in radial quantization on the lattice. The lattice necessarily breaks spherical symmetry down to icosahedral symmetry, so efforts must be made to restore spherical symmetry —even at the classical level —by clever construction of the action. Linear finite elements have been shown to improve the spectrum of the Laplacian. In this work, we introduce spherical finite elements, which are bounded not by chords but by great circle arcs. We compare the spectra of the linear finite element Laplacian to the spherical finite element Laplacian.

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