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Spectral methods for Dirichlet fractional Laplacian problems on the union of balls

Because of the non-locality and singularity of the solutions, Dirichlet problems for the fractional Laplacian are much more difficult both numerically and analytically. In this talk, spectral methods with zero boundary conditions outside the union of balls will be discussed, by taking advantage of certain known eigen-pairs of the fractional Laplacian operator on spheres