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*Sparse spectral methods for singular integral and fractional differential equations*

The ultraspherical spectral method originated as an approach for generate sparse, almost banded discretisations for ordinary differential equations. It was subsequently generalised to partial differential equations on simple geometries, singular integral equations with logarithmic kernels, and fractional differential equations. In this talk we review these developments and discuss new generalisations to power-law kernels.

Contains joint work with Timon Gutleb, Mikael Slevinsky and Alex Townsend.