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## Interpolating data on the Cubed Sphere with Spherical Harmonics

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The Cubed Sphere is a grid commonly used in numerical simulation in climatology. In this talk we present recent progress

on the algebraic and geometrical properties of this highly symmetrical grid.

First, an analysis of the symmetry group of the Cubed Sphere will be presented: this group is identified as the group of the Cube, [1]. Furthermore, we show how to construct a discrete Spherical Harmonics (SH) basis associated to

the Cubed Sphere. This basis displays a truncation scheme relating the zonal and longitudinal mode numbers reminiscent of the rhomboidal truncation on the Lon-Lat grid.

The new analysis allows to derive new quadrature rules of interest for applications in any kind of spherical modelling. In addition, we will comment on applications in mathematical climatology and meteorology, [2].

[1] J.-B. Bellet, Symmetry group of the equiangular Cubed Sphere, preprint, IECL, Univ. Lorraine, 2020, submitted

[2] J.-B. Bellet, M. Brachet and J.-P. Croisille, Spherical Harmonics on The Cubed Sphere, IECL, Univ. Lorraine, 2021, Preprint.