

Wavelet frames of higher Riesz transforms

Stefan Held

Technische Universität München, TUM,

Zentrum Mathematik M6

Up to now steerable wavelets are in general either steerable filters or (higher-) Riesz transforms of radial wavelets. In the talk we will look at the representation theoretic background behind both approaches to see the relation between them. This will result in a new definition of higher Riesz transforms that yields a phase decomposition and a construction method for customized higher Riesz transforms. The derived phase is connected to functions which satisfy a differential equation with respect to a hypercomplex differential operator yields a factorization of a power of the Laplace operator. Finally we will take a closer look at the properties of higher Riesz transforms and implementational aspects.