

1111-30-132

L. Cnudde* (lander.cnudde@ugent.be) and **H. De Bie** (hendrik.debie@ugent.be). *Slice Fourier transform: definition, properties and corresponding convolutions*. Preliminary report.

In this talk, a Fourier transform is constructed in the context of slice monogenic functions. Based on an appropriate extension of the Dirac operator and a corresponding inner product, an orthogonal set of Clifford-Hermite functions is defined and imposed as the basis of eigenfunctions of the integral transform. Inspired by the differential properties of these Clifford-Hermite functions, suitable eigenvalues are chosen in order to fix the slice Fourier transform completely. Using the Mehler formula, the kernel function of the integral transform could be written in a closed form which corresponds to this set of eigenfunctions and their respective eigenvalues. This closed form allows for a closer study of the properties of the slice Fourier transform and the definition of three slice convolutions. By introducing the concept of generalized translation operators, one of these could be defined such that it mirrors the convolution property of the classical Fourier transform. Given the clear structure of the method leading to the slice Fourier transform, it is explored as an algorithm to define generalized Fourier transforms in some other algebraic settings too. (Received February 09, 2015)