

Abstract: There have been a number of attempts to develop a useful analogue of the classical Fourier transform suitable for the of multichannel signals on n -dimensional euclidean space. The Clifford-Fourier transform (CFT) of Brackx, De Schepper and Sommen has a number of attractive properties which make it a good candidate for such a role. In this talk we discuss recent work done with Mark Craddock (University of Technology, Sydney) on determining the kernel of this transform, and with Andrew Morris and David Franklin (University of Newcastle, Australia) on the use of the CFT in the construction of continuous and discrete wavelets on the plane, the characterization of translation-invariant submodules of the space of square-integrable quaternion-valued functions on the plane, and the proof that the Bernstein space coincides with the Paley-Wiener space in higher dimensions.