

Title: Radon and Fourier transforms of differential forms.

Abstract:

The relation between Fourier and Radon transforms for functions is well known. I will show that a similar relation exists between the Radon transform of differential forms (and its generalizations) and a certain 'Fourier transform' that connects (pseudo)differential forms on the total spaces of antidual vector bundles. Here "antidual" means dual and parity reversion, in the sense of supergeometry. Such an approach leads to concrete inversion formulas for Radon-type transforms of differential forms.

(This is a different approach from that of Gelfand-Gindikin-Graev-Shapiro. A connection between these methods is not yet known.)

Geometrically, the class of integral transforms that we consider can be interpreted in terms of morphisms of vector bundles and the aforementioned relation with our Fourier transform of forms can be viewed as the functoriality of Fourier transform on a certain category.

The talk is based on my paper of 1988: Math. Notes 44 (1988), no. 5-6, 886-896.