Fourier transform and Pseudo-differential operators

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Abstract: We consider the development of the Fourier analysis based on a boundary value problem for the derivative operator on a segment. In particular, we derive an explicit formula for the convolution generated by the problem. We start in direction of discrete analysis based on elliptic boundary value problems, continuing, in a sense, the analysis on the torus that introduced by M.Ruzhansky and V. Turunen [1], in which case one may think of a problem having periodic boundary conditions.

Keywords: Fourier transform, pseudo-differential operator.

References:

[1] M. Ruzhansky, V. Turunen, Quantization of Pseudo-differential operators on the torus, J. Fourier Anal. Appl., vol. 16, pp. 943–982, 2010.