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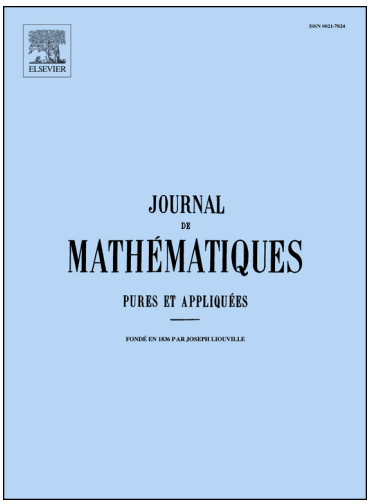

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On quasianalytic classes of Gelfand-Shilov type. Parametrix and convolution

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Abstract

We develop a convolution theory for quasianalytic ultradistributions of Gelfand-Shilov type. We also construct a special class of ultrapolynomials, and use it as a base for the parametrix method in the study of new topological and structural properties of several quasianalytic spaces of functions and ultradistributions. In particular, our results apply to Fourier hyperfunctions and Fourier ultra-hyperfunctions.

Résumé

On dévelope une théorie de convolution pour les ultradistributions quasianalytiques de type Gelfand-Shilov. On construit aussi une classe spéciale des ultrapolynômes et on l'utilise comme base pour la méthode de parametrix dans l'étude des nouvelles propriétés topologiques et structurelles de quelques espaces quasianalytiques fonctionnels et ultradistributionnels. En particulier, nos résultats appellent aux hyperfonctions et ultrahyperfonctions de Fourier.

Keywords: Convolution, parametrix method, quasianalytic classes, ultradifferentiable functions, ultradistributions, Gelfand-Shilov spaces, hyperfunctions, ultrahyperfunctions
2010 MSC: 46E10, 46F05, 46E40, 46F10, 46F15, 44A35

Introduction

Convolution is among the most important operations in mathematical analysis. In the case of distributions, this a classical and much studied topic within Schwartz' theory [17, 40, 41, 39, 43] (see also the relevant references [10, 11, 18, 44]). Although many central problems concerning the convolution of Schwartz distributions were solved long time ago, one may still find many interesting results in the recent literature [1, 12, 30, 31].

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