

Pseudo-differential Type Operator on Certain Gevrey Type Spaces

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Abstract

In this paper we have established the continuity of Pseudo-differential type operator $h_{\alpha,\beta,a}$ on the space $H_{\alpha,\beta}(w)$. Further the continuity of $h_{\alpha,\beta,a}$ is also investigated on certain Gevrey spaces when the symbol of the Pseudo-differential type operator also belongs to a certain Gevrey class.

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1. Introduction

In recent years the theory of pseudo-differential type operators has been developed by many researchers in India and outside India. Recently Pathak and Pathak [4], Waphare [6,7] have studied pseudo-differential type operator associated with Bessel type operators. In this paper, we develop the theory of pseudo-differential type operator on Gevrey spaces.

The Hankel type transformation

$$(h_{\alpha,\beta}\phi)(y) = \int_0^{\infty} (xy)^{\alpha+\beta} J_{\alpha-\beta}(xy) \phi(x) dx, (\alpha - \beta) \geq -\frac{1}{2} \quad (1.1)$$

is known to be an automorphism on the Zemanian type space $H_{\alpha,\beta}(I)$, $I = (0, \infty)$, which consists of all complex valued infinitely differentiable functions ϕ on I satisfying: