

A convolution type characterization for L^p - multipliers for the Heisenberg group

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(Communicated by Lech Maligranda)

2000 Mathematics Subject Classification. Primary: 42B15, Secondary: 42B10, 43A15.

Keywords and phrases. Group Fourier Transform, Heisenberg group, Multiplier, Pseudomeasure.

Abstract. It is well known that if m is an L^p - multiplier for the Fourier transform on \mathbb{R}^n ($1 < p < \infty$), then there exists a pseudomeasure σ such that $T_m f = \sigma * f$. A similar result is proved for the group Fourier transform on the Heisenberg group H^n . Though this result is already known in generality for amenable groups, a simple proof is provided in this paper.

1. Introduction

One of the fundamental problems in Multiplier theory is the characterization of L^p multipliers ($1 < p < \infty$) for the Fourier transform. Different types of such characterizations have been considered under various situations in the literature. One of the important characterizations is to obtain sufficient conditions on $m \in L^\infty(\mathbb{R}^n)$ such that $T_m f = (m\hat{f})^\vee$ gives rise to a bounded operator T_m on $L^p(\mathbb{R}^n)$, which is popularly known as Hormander's multiplier theorem. According to another characterization,