

On Kohn-Nirenberg symbols of operators on the Heisenberg group

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We examine Kohn-Nirenberg symbols in relation to their operators on the Heisenberg group. Our goal is to gain criterias for an operator, such that its symbol is uniformly bounded. Estimates of this form are of importance to Beals-Cordes type characterizations of certain algebras of pseudodifferential operators, defined by Michael Ruzhansky and Vernonique Fischer. The used methods involve a Schwartz-kernel representation of both the Kohn-Nirenberg quantization and the Fourier transform on the Heisenberg group with respect to alternative spaces of test functions. These test functions are either defined to be usual Schwartz functions, which are orthogonal to all polynomials in the center coordinates of the Heisenberg group, or defined to be operator valued Schwartz functions vanishing rapidly in zero.

Also we find, analogously to the compact group case, a representation of the Kohn-Nirenberg symbols with the help of Fourier multipliers given by vector valued, slowly increasing functions.