WIGNER FUNCTIONS AND WEYL OPERATORS ON THE EUCLIDEAN MOTION GROUP

LAARNI B. NATIVIDAD AND JOB A. NABLE

Abstract. The Wigner distribution function is one of the pillars of the phase space formulation of quantum mechanics. Its original formulation may be cast in terms of the unitary representations of the Weyl - Heisenberg group. Following the construction proposed by Wolf and coworkers in constructing the Wigner functions for general Lie groups using the irreducible unitary representations of the groups, we develop here the Wigner functions and Weyl operators on the Euclidean motion group of rank three. We give complete derivations and proofs of their important properties.

Contents