PHASE SPACE FUNCTION AND OPERATOR CORRESPONDENCE ON THE EUCLIDEAN MOTION GROUP

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Functions parametrized by translations and rotations are associated to unitary operators, which act on square-integrable functions on spheres. This Weyl correspondence allows for phase space representations of quantum operators over the Euclidean motion group, as well as providing Wigner distribution functions on the group. The star-product of a pair of phase-space functions will be defined via the composition of two Weyl operators and properties of this star-product analogous to standard properties of algebras of quantum observables will be inferred from the Weyl calculus of operators. A fundamental formula relating the Weyl operator and the Wigner distribution function will also be proved.

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