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On a moduli space of the Wigner quasiprobability distributions

A mapping between operators on the Hilbert space of a finite-dimensional quantum system and the Wigner quasiprobability distributions defined on the symplectic flag manifold is discussed.
The mapping is carried out by the kernel satisfying the Stratonovich-Weyl correspondence. Based on the algebraic equations for the eigenvalues of the Stratonovich-Weyl kernel, the moduli space of the Wigner quasiprobability distribution is determined. The general consideration is exemplified by a detailed description of the Wigner quasiprobability distributions of 2, 3 and 4-dimensional systems.

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