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On the dichotomy of “elementary versus composite” in Stratonovich-Weyl correspondence for qudits

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The issue of evidence of a quantum system to be an elementary or a composite one is discussed within the Stratonovich-Weyl correspondence for finite dimensional systems.

The numerical experiments with a 4-level quantum system are performed in order to understand how its virtual 2-level subsystems manifest themselves in the properties of the Wigner quasiprobability distributions of quantum states.

The results of our studies show that “compositeness of a quantum system” is encoded not only in the density matrix of quantum state but in the structure of the Stratonovich-Weyl kernels as well.

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