Contextuality and Wigner negativity are equivalent for continuous-variable quantum measurements

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Quantum computers promise considerable speedups with respect to their classical counterparts. However, the identification of the innately quantum features that enable these speedups is challenging. In the continuous-variable setting-a promising paradigm for the realization of universal, scalable, and fault-tolerant quantum computing-contextuality and Wigner negativity have been perceived as two such distinct resources. Here we show that they are in fact equivalent for the standard models of continuous-variable quantum computing. While our results provide a unifying picture of continuous-variable resources for quantum speedup, they also pave the way toward practical demonstrations of continuous-variable contextuality and shed light on the significance of negative probabilities in phase-space descriptions of quantum mechanics.