Quasiprobabilities - the art of erroneously determining chances

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For many decades, quasiprobabilities have been instrumental to tell a classical state apart from a genuine quantum state. That is, negative probabilities can visualize diverse quantum phenomena. In this presentation, we explore this concept together in the context of modern approaches.
Beyond common quasiprobabilities well known in quantum optics, we describe how other quantum coherence phenomena can be characterized through quasiprobabilities, specifically designed for each notion of quantumness. For example, one instance is a joint quasiprobability distribution that is negative if and only if the measured system is entangled. A special focus is put on the function of quasiprobabilities which allows for the decomposition of a quantum state in terms of classical states, as well as the failure thereof. Moreover, we extend the notion of quasiprobabilities to detection devices, rendering it possible to assess the classical or quantum nature of a measurement. Our broad discussion is supplemented by a number of experimental realizations, demonstrating the utility of quasiprobabilities in practice.