

Abstract Submitted
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The Classical Cheshire Cat¹ DAVID ATHERTON, GAMBHIR RANJIT, ANDREW GERACI, JONATHAN WEINSTEIN, University of Nevada, Reno — In this talk we will discuss the phenomenon of the Quantum Cheshire Cat which has recently received significant attention from popular science outlets after the Nature publication of a recent neutron interferometry experiment. The authors of the experiment argue that their results can be interpreted as the spin of the neutron being physically separated from the neutron location. We have reproduced and extended these results with an equivalent optical interferometer. We also could argue that our results suggest that the photon travels through one arm of the interferometer, while its polarization travels through the other. However, we show that these experimental results belong to the domain where quantum and classical wave theories coincide; there is nothing uniquely quantum about the illusion of this Cheshire cat.

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