

Abstract Submitted
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Single Electron Double Slit Experiment and Wide Angle Beam Splitter¹ SCOT MCGREGOR, ROGER BACH, ADAM CAPREZ, HERMAN BATELAAN, University of Nebraska-Lincoln, KAYVAN AFLATOONI, Fort Hays State University, DAMIAN POPE, Perimeter Institute of Theoretical Physics — We present our work on a double slit experiment for single electrons. In this experiment an electron interference pattern is recorded one electron at a time. Similar experiments have been done for single electron interference patterns, but never before has this been done for a true double slit. Our experiment is to be included in a documentary about quantum mechanical interference, which is being made by the Perimeter Institute and will be made available to quantum mechanics instructors. We also present data from our wide angle electron beam splitter. The beam is split by a nanofabricated grating after which a Möllenstedt biprism allows for further separation of the diffraction orders. With this beam splitter a beam separation of one centimeter is reached at the detection plane. Difficulties are discussed in the development of this beam splitter as well as the possibility of using such a beam splitter in a large area electron interferometer.

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