

Abstract Submitted
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Experimental Evidence for Violation of Bohr's Principle of Complementarity SHAHRIAR S. AFSHAR, Harvard Univ. / Rowan Univ. — We have implemented a novel double-slit which-way experiment which raises interesting questions of interpretation. Coherent laser light passes through a dual pinhole, and the resulting interference pattern is passed through a converging lens which produces well-resolved images of the two pinholes, providing full which-way information. A series of thin wires are then placed at the minima of the interference pattern upstream of the lens. No reduction in the total flux or resolution of the images is found, providing evidence for coexistence of perfect interference and which-way information in the same experiment, contrary to the common readings of Bohr's principle of complementarity. Implications of the experiment for the measurement theory are also briefly discussed.

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