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Photon trajectories in multiple slit interference experiments with femtosecond pulses of light? LUIS GRAVE DE PERALTA, Department of Physics, Texas Tech University, AYRTON BERNUSSI, Department of Electrical and Computer Engineering, Texas Tech University — A burst of pulses was observed at each output of the experimental arrangement, when a multiple slit was illuminated with a femtosecond pulse of light. Multiple times of fly became observably different and thus, each pulse in an output burst could be univocally associated with a particular slit. Nevertheless, interference between non-overlapping pulses was also observed. Previously, we have used a Fourier Optics approach to explain why interference was observed in conditions where which-path information was available [1]. We show in this work that the observed interference pattern can also be successfully described assuming that the energy of the light travels following well defined paths. Ref.: [1] "Ultra fast response of arrayed waveguide gratings," L. Grave de Peralta, A.A. Bernussi and H. Temkin, IEEE Journal of Quantum Electronics, vol. 43, 473 (2007).

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