Abstract Submitted
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Exploring Entangled Two-Photon Absorption in Molecules[1]
JOHN CARAHER, DePauw University — Goodson and colleagues have reported anomalously large cross-sections (of order $\sigma = 10^{-17}$ cm^2) for the two-photon absorption of entangled photons in a number of molecules [1-3]. This poster reports on attempts to replicate and expand upon their results for one of these, zinc tetraphenylporphyrin (Zn TPP) in chloroform solution. It will also discuss the interpretation of the Goodson group's experimental data, particularly their results regarding entanglement area and entanglement time (the spatial and temporal widths of the fourth-order coherence functions, respectively)[4]. Results of direct measurement of entanglement time (via a Hong-Ou-Mandel interferometer) for a laser and optical system essentially identical to the one used in Goodson's work will be presented and compared with their reported values.

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[2] M. R. Harpham, O. Suzer, C.-Q. Ma, P. Bauerle, and T. Goodson, III, J. Am. Chem. Soc., 131, 973 (2009)
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[4] B.E.A. Saleh, B.?M. Jost, H.-B. Fei, and M.C. Teich, Phys. Rev. Lett. 80, 3483 (1998)

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John Caraher
DePauw University

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