

Abstract Submitted
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Temporal Photon Correlations and Two-Photon Absorption in Alkali Metals DANIEL BENNETT, BRIAN SPECTOR, KYLE FOSTER, JOHN CARAHER, DePauw University — Virtual-state spectroscopy[1] (VSS) is a proposal to use temporal correlations between photons as a probe of the eigenstate composition of the virtual state involved in a two-photon absorption process. The technique relies upon measuring modulations in the two-photon absorption cross section as “entanglement time” and imposed delays vary on a femtosecond scale. Photon pairs produced via parametric downconversion are the basis for these experiments. We report studies of the constraints on observing these effects in Na and Rb. This work involves computer simulations of VSS for the $3s - 4s$ transition in Na and the $5s - 5d$ transition in Rb with the goal of establishing the parameters required for a successful experimental test. We also report on parallel laboratory investigations in support of this goal. [1] B.E.A. Saleh, B.M. Jost, H. B. Fei, M.C. Teich, Phys. Rev. Lett., **80** 3483 (1998)

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