

## CURRICULUM VITAE

### TODD B. PITTMAN

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### Education

Ph.D.	1996	UMBC, Applied Physics
M.S.	1992	UMBC, Applied Physics
B.S.	1990	Bucknell University, Physics

### Positions Held

2016 – Present	UMBC, Professor, Physics
2006 – 2016	UMBC, Associate Professor, Physics
1998 – 2006	Johns Hopkins University Applied Physics Lab, Senior Research Scientist
1996 – 1998	Johns Hopkins University Applied Physics Lab, Post-Doctoral Fellow

### Publications

1. C.J. Evans, C.M. Nunn, S.W.L. Cheng, J.D. Franson, and T.B. Pittman, “Experimental storage of photonic polarization entanglement in a broadband cyclical quantum memory”, *Phys. Rev A* **108**, L050601 (2023).
2. C.M. Nunn, S.U. Shringarpure, and T.B. Pittman, “Transforming photon statistics through zero-photon subtraction”, *Phys. Rev. A* **107**, 043711 (2023).
3. C.M. Nunn, J.D. Franson, and T.B. Pittman, “Modifying quantum optical states by zero-photon subtraction”, *Phys. Rev. A* **105**, 033702 (2022).
4. S.U. Shringarpure, C.M. Nunn, T.B. Pittman, and J.D. Franson, “Coherence of quantum states after

- noiseless attenuation”, *Rev. A* **105**, 013704 (2022).
5. C.M. Nunn, J.D. Franson, and T.B. Pittman, “Heralding on the detection of zero photons”, *Phys. Rev. A* **104**, 033717 (2021).
  6. H.P. Lamsal, J.D. Franson, and T.B. Pittman, “Maximizing optical production of metastable xenon”, *Opt. Express* **28**, 24079 (2020).
  7. I.C. Nodurft, S.U. Shringarpure, B.T. Kirby, T.B. Pittman, and J.D. Franson, “Nonlocal dispersion cancellation for three or more photons”, *Phys. Rev. A* **102**, 013713 (2020).
  8. H.P. Lamsal, J.D. Franson, and T.B. Pittman, “Transmission characteristics of optical nanofibers in metastable xenon”, *Appl. Opt.* **58**, 6470 (2019).
  9. I.C. Nodurft, R.A. Brewster, T.B. Pittman, and J.D. Franson, “Optical attenuation without absorption”, *Phys. Rev. A* **100**, 013850 (2019).
  10. R.A. Brewster, T.B. Pittman, and J.D. Franson, “Reduced decoherence using squeezing, amplification, and anti-squeezing”, *Phys. Rev. A* **98**, 033818 (2018).
  11. R.A. Brewster, I.C. Nodurft, T.B. Pittman, and J.D. Franson, “Noiseless attenuation using an optical parametric amplifier”, *Phys. Rev. A* **96**, 042307 (2017).
  12. G.T. Hickman, J.D. Franson, and T.B. Pittman, “Optically enhanced production of metastable xenon”, *Opt. Lett.* **41**, 4372 (2016).
  13. D.E. Jones, G.T. Hickman, J.D. Franson, and T.B. Pittman, “Nanofiber-segment ring resonator”, *Opt. Lett.* **41**, 3683 (2016).
  14. G.T. Hickman, T.B. Pittman, and J.D. Franson, “Low-power cross-phase modulation in a metastable xenon-filled cavity for quantum information applications”, *Phys. Rev. A* **92**, 053808 (2015).
  15. D.E. Jones, J.D. Franson, and T.B. Pittman, “Ladder-type electromagnetically induced transparency using nanofiber-guided light in a warm atomic vapor”, *Phys. Rev. A* **92**, 043806 (2015).
  16. B.T. Kirby, G.T. Hickman, T.B. Pittman, and J.D. Franson, “Feasibility of single-photon cross-phase modulation using metastable xenon in a high finesse cavity”, *Opt. Commun.* **337**, 57 (2015).
  17. G.T. Hickman, T.B. Pittman, and J.D. Franson, “Saturated absorption at nanowatt power levels using metastable xenon in a high-finesse optical cavity”, *Opt. Express* **22**, 22882 (2014).
  18. D.E. Jones, J.D. Franson, and T.B. Pittman, “Saturation of atomic transitions using sub-wavelength diameter tapered optical fibers in rubidium vapor”, *J. Opt. Soc. Am. B* **31**, 1997 (2014).
  19. T.B. Pittman, “Viewpoint: It’s a good time for time-bin qubits”, *Physics* **6**, 110 (2013).
  20. T.B. Pittman, D.E. Jones, and J.D. Franson, “Ultralow-power nonlinear optics using tapered optical fibers in metastable xenon”, *Phys. Rev. A* **88**, 053804 (2013).

21. M.M. Lai, J.D. Franson, and T.B. Pittman, "Transmission degradation and preservation for tapered optical fibers in rubidium vapor", *Appl. Opt.* **52**, 2595 (2013).
22. S.M. Hendrickson, C.N. Weiler, R.M. Camacho, P.T. Rakich, A.I. Young, M.J. Shaw, T.B. Pittman, J.D. Franson, and B.C. Jacobs "All-optical switching demonstration using two-photon absorption and the classical Zeno effect", *Phys. Rev. A* **87**, 023808 (2013).
23. J. Liang, J.D. Franson, and T.B. Pittman, "Time-bin entangled photon holes", *Phys. Rev. A* **86**, 053831 (2012).
24. J. Liang, S.M. Hendrickson, and T.B. Pittman, "Role of pump coherence in two-photon interference experiments", *Phys. Rev. A* **83**, 033812 (2011).
25. S.M. Hendrickson, M.M. Lai, T.B. Pittman, and J.D. Franson, "Observation of two-photon absorption at low power levels using tapered optical fibers in rubidium vapor", *Phys. Rev. Lett.* **105**, 173602 (2010).
26. J.L. Liang and T.B. Pittman, "Compensating for beamsplitter asymmetries in quantum interference experiments", *J. Opt. Soc. Am. B* **27**, 350 (2010).
27. S.M. Hendrickson, T.B. Pittman, and J.D. Franson, "Nonlinear transmission through a tapered fiber in rubidium vapor", *J. Opt. Soc. Am. B* **26**, 267 (2009).
28. S.M. Hendrickson, T.B. Pittman, and J.D. Franson, "Microcavities using holey fibers", *IEEE J. Lightwave Tech.* **25**, 3068 (2007).
29. T.B. Pittman, B.C. Jacobs, and J.D. Franson, "Investigation of a single-photon source based on quantum interference", *New J. Phys.* **9**, 125 (2007).
30. T.B. Pittman, "Development of a parametric down-conversion source for two-photon absorption experiments", *Proc. SPIE 6710 Quantum Communications and Quantum Imaging V*, 67100B (2007).
31. J.D. Franson, B.C. Jacobs, and T.B. Pittman, "Zeno logic gates using microcavities", *J. Opt. Soc. Am. B* **24**, 209 (2007).
32. T.B. Pittman and J.D. Franson, "Generation of entangled photon holes using quantum interference", *Phys. Rev. A* **74**, 041801(R) (2006).
33. B.C. Jacobs, T.B. Pittman, and J.D. Franson, "Single photon source using laser pulses and two-photon absorption" *Phys. Rev. A* **74**, 010303 (R) (2006).
34. T.B. Pittman, B.C. Jacobs, and J.D. Franson, "Demonstration of quantum error correction using linear optics", *Phys. Rev. A* **71**, 052332 (2005).
35. T.B. Pittman, B.C. Jacobs, and J.D. Franson, "Heralding single photons from pulsed parametric down-conversion", *Opt. Comm.* **246**, 545-550 (2005).

36. T.B. Pittman, B.C. Jacobs, and J.D. Franson, "Experimental demonstration of a quantum circuit using linear optics gates", *Phys. Rev. A* **71**, 032307 (2005).
37. J.D. Franson, B.C. Jacobs, and T.B. Pittman, "Quantum computing using single photons and the Zeno effect", *Phys. Rev. A* **70**, 062302 (2004).
38. T.B. Pittman, B.C. Jacobs, and T.B. Pittman, "Quantum computing using linear optics", *Johns Hopkins APL Tech. Digest* **25**, 84-90 (2004).
39. T.B. Pittman, B.C. Jacobs, and J.D. Franson, "Probabilistic quantum encoder for single-photon qubits", *Phys. Rev. A* **69**, 042306 (2004).
40. T.B. Pittman, M.M. Donegan, M.J. Fitch, B.C. Jacobs, J.D. Franson, H. Lee, P. Kok, and J.P. Dowling, "Heralded two-photon entanglement from probabilistic quantum logic operations on multiple parametric down-conversion sources", *J. Sel. Topics in Quant. Elec.* **9**, 1478-1482 (2003).
41. M.J. Fitch, B.C. Jacobs, T.B. Pittman, and J.D. Franson, "Photon-number resolution using time-multiplexed single-photon detectors", *Phys. Rev. A* **68**, 043814 (2003).
42. T.B. Pittman, M.J. Fitch, B.C. Jacobs, and J.D. Franson, "Experimental controlled-NOT gate for single photons in the coincidence basis", *Phys. Rev. A* **68**, 032316 (2003).
43. T.B. Pittman and J.D. Franson, "Violation of Bell's inequality with photons from independent sources", *Phys. Rev. Lett* **90**, 240401 (2003)
44. T.B. Pittman and J.D. Franson, "Cyclical quantum memory for photonic qubits", *Phys. Rev. A* **66**, 062302 (2002).
45. B.C. Jacobs, T.B. Pittman, and J.D. Franson, "Quantum relays and noise suppression using linear optics", *Phys. Rev. A* **66**, 052307 (2002).
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51. J.D. Franson and T.B. Pittman, "Quantum logic based on photon exchange interactions", *Phys. Rev. A* **60**, 917 (1999).
  52. D.V. Strekalov, T.B. Pittman, and Y.H. Shih, "What can we learn about single photons in a two-photon interference experiment", *Phys. Rev. A* **57**, 567-570 (1998).
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  54. T.B. Pittman, D.V. Strekalov, A. Migdall, M.H. Rubin, A.V. Sergienko, and Y.H. Shih, "Can two-photon interference be considered the interference of two photons?", *Phys. Rev. Lett.* **77**, 1917-1920 (1996).
  55. T.B. Pittman, D.V. Strekalov, D.N. Klyshko, M.H. Rubin, A.V. Sergienko, and Y.H. Shih, "Two-photon geometric optics", *Phys. Rev. A* **53**, 2804-2815 (1996).
  56. T.B. Pittman, Y.H. Shih, D.V. Strekalov, and A.V. Sergienko, "Optical Imaging by means of two-photon entanglement", *Phys. Rev. A* **52**, R3429-R2432, (1995).
  57. T.B. Pittman, "On the use of double-entanglement in four-photon experiments", *Phys. Lett. A* **204**, 193-197 (1995).
  58. T.B. Pittman, Y.H. Shih, A.V. Sergienko, and M.H. Rubin, "Experimental tests of Bell's inequalities based on space-time and spin variables", *Phys. Rev. A* **51**, 3495-3498 (1995).
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