The University of Texas at San Antonio

UTSA Physics and Astronomy

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Spin-Photon Interfaces: Control and Distribution of Entanglement

Dr. Sophia Economou

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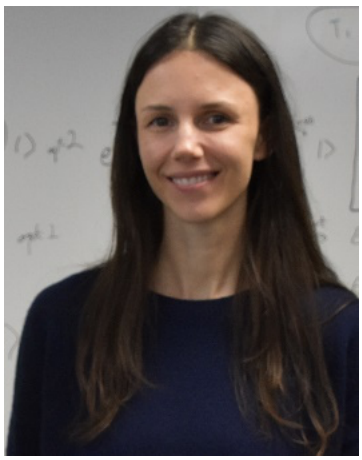
Spin-photon interfaces are ubiquitous in quantum information processing and feature intriguing physics culminating from the interplay of spin-spin, spin-photon, and spin-field interactions. Of particular interest in these systems are entangled states of nuclear spins, which can be used as quantum memories, and photonic qubits, which can be used to transmit information robustly. I will discuss the dynamics of these systems and their applications to quantum networks and photonic quantum computing.



Sophia Economou is a Professor and the T. Marshall Hahn Chair in Physics at Virginia Tech. She directs the Virginia Tech Center for Quantum Information Science and Engineering. Her research focuses on theoretical studies in quantum information science, including quantum computing, quantum communications, and quantum simulation algorithms.

Prof. Economou obtained her Ph.D. in 2006 from the University of California, San Diego, where she worked on theoretical aspects of optically controlled spin qubits. She

Washington, D.C., first as an NRC postdoc and later as a staff researcher. She joined the Physics Department at Virginia Tech in 2014.

Prof. Economou has published 61 papers cited 6,100 times (h-factor 37). In 2023, she was named a Fellow of the American Physical Society "for the development of quantum optimization methods, protocols for the generation of photonic resource states, efficient

researchers."

Faculty Host: Prof. Liao Chen