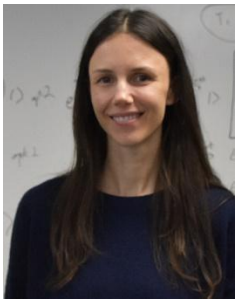
Control and distribution of entanglement in quantum networks

Abstract:
Quantum networks are pursued as a quantum backbone on which to perform secure quantum communications, distributed quantum sensing, and blind quantum computation. The building blocks of these networks are quantum repeaters, where photonic quantum information carriers are generated and error corrected through interactions with matter qubits. I will describe two paradigms of quantum repeaters and discuss in each case how careful control of a register of spin qubits can increase the entanglement distribution rate over the network. Specifically, I will describe our recent work on the accurate and fast control of nuclear spin memory qubits coupled to spin defects such as the NV center in diamond. I will also discuss the deterministic generation of photonic 'graph' states from such quantum emitters.

Speaker: Prof. Sophia Economou, Virginia Tech



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

Time/Address:

- Time: 7pm EEST/9am PDT, June 27, 2024
- Zoom Link: https://ESnet.zoom.us/j/87068479026