

Nick Konidakis – Colloquium Seminar – November 6, 2025
Carnegie Observatory

Title: The Sephira Project: Astronomical Imaging with Third-Order Intensity Correlations

Intensity interferometry promises to revolutionize high-resolution stellar imaging by circumventing the atmospheric phase stability limits that constrain conventional optical interferometry. While second-order photon correlations (g^2) have been demonstrated astronomically, no one has yet achieved the third-order correlations (g^3) required for true imaging. The Sephira Project aims to perform this measurement. Our initial six-telescope array combines cutting-edge single-photon avalanche diode arrays, picosecond timing synchronization, and purpose-built spectroscopy to push into this regime. Even marginal detection of g^3 would represent a fundamental breakthrough in astronomical instrumentation. I'll discuss our technical approach, present preliminary results from laboratory validation, and explain why success could open a new window for sub-milliarcsecond imaging.