



University of Crete
Department of Physics

Physics Colloquium

Thursday, 21 November 2024 | 17:00 – 18:00, Seminar Room 3rd Floor

From Quantum Insight to Industrial Impact: Applications and Innovations with quantum systems

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ABSTRACT

The application of quantum technologies in industrial environments has marked a transformative phase in modern scientific and engineering fields. This talk will explore the multifaceted roles of nitrogen-vacancy (NV) centers in diamond, covering their foundational importance in magnetometry and their integration into quantum computing and data storage. NV centers, with their unique spin properties and high sensitivity, have become pivotal in advancing nanoscale magnetic sensing and enabling robust qubit initialization and readout in quantum information systems. I will also discuss the challenges and breakthroughs in photon collection efficiency and microwave delivery that have shaped recent developments in NV-based applications.

Extending beyond the scope of NV centers, I will introduce my recent work at Q.ANT, focusing on the development of a lithium niobate-based optical photonic computer. This innovative approach merges photonics with quantum mechanics to realize faster, more efficient computational paradigms suited for complex industrial applications. The presentation will highlight the convergence of these technologies and their implications for practical, scalable solutions in real-world settings.