



HELLENIC REPUBLIC  
MINISTRY OF DEVELOPMENT  
AND INVESTMENTS  
GENERAL SECRETARIAT FOR RESEARCH AND INNOVATION



NATIONAL CENTRE FOR  
SCIENTIFIC RESEARCH "DEMOKRITOS"

P.O. BOX 60037 | 15310 AGIA PARASKEVI • GREECE | TEL: 0030 210 650 3000 | [www.demokritos.gr](http://www.demokritos.gr)

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INSTITUTE OF NUCLEAR AND PARTICLE PHYSICS

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## Colloquium

# Hybrid quantum circuits : from atomic physics on a chip to quantum enhanced detection of dark matter

**Takis Kontos**

**Ecole Normale Supérieure**

**Tuesday 10<sup>th</sup> January 2023, 16:00 EET**

### Abstract

In this talk, I will show how hybrid quantum circuits can be used to follow three paths related to quantum information science. In particular, I will discuss how they can host quantum bits for spins or topological degrees of freedom, with perspectives for quantum computing. I will also show that they could be a resource for quantum simulation of interacting hybrid fermion-boson systems. Finally, I will also discuss our prospects for using them as quantum sensors for axions or axion-like particles, which, if they exist, are promising candidates to explain dark matter in the universe.

Indico page: <https://indico.cern.ch/event/1234819/>

Videoconference via <https://us02web.zoom.us/j/81125161174>

Contact: C. Markou, [cmarkou@inp.demokritos.gr](mailto:cmarkou@inp.demokritos.gr)

M. Axenides, [axenides@inp.demokritos.gr](mailto:axenides@inp.demokritos.gr)