



Contribution ID: 194

Type: **Poster**

Magnetically-levitated superconductors for dark matter detection

Monday 28 August 2023 20:03 (1 minute)

Magnetically-levitated superconducting particles have potential as ultrasensitive inertial sensors for dark matter detection. They can be highly-isolated from their surroundings, in ultrahigh vacuum at cryogenic temperatures, and confined in dissipationless traps. They can be coupled to superconducting quantum circuits, offering the potential for sensing the particle motion beyond the standard quantum limit.

We have been developing this platform for performing quantum experiments using macroscopic (micrometer-scale) particles. By scaling-up to centimetre-scale particles, it can make an excellent sensor for impulses from dark matter near the Planck scale, and for ultralight dark matter candidates.

Submitted on behalf of a Collaboration?

No

Authors: Dr HIGGINS, Gerard (Institute for Quantum Optics and Quantum Information (IQOQI), Vienna, Austria); Mr HOFER, Joachim (University of Vienna); Dr SCHMIDT, Philip (IQOQI, Vienna); Mr CLAESSEN, Rémi (IQOQI, Vienna); Mr HANSEN, Jannek (IQOQI, Vienna); Dr GUTIERREZ LATTORE, Martí (Chalmers University); Mr PARADKAR, Achintya (Chalmers University); Dr TRUPKE, Michael (IQOQI, Vienna); Dr WIECZOREK, Witlef (Chalmers University); Prof. ASPELMEYER, Markus (IQOQI, Vienna & University of Vienna)

Presenter: Dr HIGGINS, Gerard (Institute for Quantum Optics and Quantum Information (IQOQI), Vienna, Austria)

Session Classification: Poster session

Track Classification: Dark matter and its detection