Contribution ID: **58** Type: **not specified**

Operation of a ferrimagnetic Axion haloscope at ma = 58 microeV

Thursday, 23 August 2018 09:00 (30 minutes)

In the QUAX experiment, dark matter axions are searched by means of their resonant interactions with electronic spins in a magnetized sample. In principle axion-induced magnetization changes can be detected embedding a sample in a rf cavity under a static magnetic field. In this presentation we describe the operation of a prototype ferrimagnetic haloscope, whose sensitivity is limited only by thermal effects. With a preliminary axion search, we are able to produce an upper limit on cosmological DSFZ axions of gaee < 4.9 × 10^-10 at 90% C.L. for an axion mass of 58 microeV (i.e. 14 GHz) and assuming a local DM density of 0.45 GeV/cm^3. This is the first reported measurement of the coupling between cosmological axions and electronic spins. Some preliminary measurements with a NbTi superconducting cavity will be presented.

Primary author: Prof. CARUGNO, giovanni (INFN & Padova University)

Co-author: Dr RUOSO, giuseppe (INFN)

Presenter: Prof. CARUGNO, giovanni (INFN & Padova University)