Prof. Dr. Peter van Loock
Institut für Physik
loock@uni-mainz.de

Dr. Lars von der Wense
Institut für Physik
lars.vonderwense@uni-mainz.de

JOHANNES GUTENBERG UNIVERSITÄT MAINZ

Seminar über Quanten-, Atom- und Neutronenphysik (QUANTUM)

Jan. 14, 2021 at 2 p.m. c.t.
None

Tanya S. Roussy, M.A.
JILA (University of Colorado Boulder & NIST)

Using ‘old’ particles to search for ‘new’ ones: atomic physics is an ideal tool for dark matter searches

Over the past few decades, accelerators have been the traditional venue for new particle discoveries – but the paradigm is shifting. Accelerator energies are likely to remain on a plateau for some time, while atomic physics & precision measurement are in a remarkable period of progress. Some limits have advanced by a factor of 100 in less than 10 years, and laser technologies are being refined to exquisite levels. New Physics searches are already an established avenue in the atomic physics field; from atomic parity violation, to EDM searches, to equivalence principle tests. Happily, many of these platforms are well-suited to do double-duty as broadband dark matter searches. In this talk, I will explain the basics of our unique trapped-ion electron EDM search, how we used our recent data to constrain the gluon to axion-like particle coupling over seven mass decades, and how we solved some important methodological issues along the way.

Contact:
Andrea Graham
Institut für Physik
graham@uni-mainz.de