

The electron's electric dipole moment

New Research Program 2017-2023



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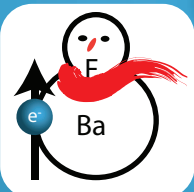
7 PhD positions and 1 postdoc position

Particle physics with cold molecules

With a recently awarded FOM program grant, we are starting an exciting new project on a precision measurement of the electric dipole moment (EDM) of the electron. This property, which is predicted by the Standard Model of particle physics to be extremely small, is a powerful probe to explore physics beyond this Standard Model. All extensions to the Standard Model, most prominently supersymmetry, naturally predict an electron EDM that is just below the current experimental limits - and we aim to improve on the best current measurement by at least an order of magnitude. To do so we will perform a precision measurement on a slow beam of laser-cooled BaF molecules. With this experiment we test physics at energies comparable to those of the Large Hadron Collider!

The eEDM search is a joint effort of the Van Swinderen Institute (VSI) in Groningen and the Laser-Lab at the VU Amsterdam. The experiment is located in the VSI labs in Groningen. **We are looking for several enthusiastic PhD students** who want to be part of this effort and solve challenging tasks related to intense cryogenic molecular sources, slowing and laser cooling of molecules, and the design and construction of the core of the eEDM interaction region. These experimental tasks will be combined with theoretical topics to jointly create the most advanced eEDM experiment. We aim to have completed a first competitive measurement in the next five years.

Contact



This is a joint program of Rick Bethlem (VU), Anastasia Borschevsky (VSI), Steven Hoekstra (VSI), Klaus Jungmann (VSI), Rob Timmermans (VSI), Wim Ubachs (VU) and Lorenz Willmann (VSI). The Van Swinderen Institute is part of the National Institute for Subatomic Physics Nikhef.

If you are interested to know more about the available projects, and for details on how to apply, look at tinyurl.com/coldmol-eEDM or contact the program leader, Prof.dr. Steven Hoekstra (s.hoekstra@rug.nl).