

# Department of Physics

Particle Physics

The Denys Wilkinson Building, Keble Road, Oxford OX1 3RH



## Experimental Particle Physics Seminar

at 2.15 pm

Dennis Sciama Lecture Theatre

Tuesday 26<sup>th</sup> November 2019

Dr Klaus Eitel

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### Searches for low-mass Dark Matter particles with EDELWEISS

#### Abstract

EDELWEISS is a phased direct Dark Matter search program based on cryogenic high purity Ge mono-crystals. The simultaneous measurement of heat via thermal sensors (NTDs) and ionization allows for discrimination of nuclear and electron recoils. Based on electronic recoils, a search for axions and axion-like particles in the keV mass range has been performed. With an optimized setup of phonon readout, first limits for sub-GeV spin-independent Dark Matter searches with Ge targets were achieved. These searches have been extended to Strongly Interacting Massive Particles (SIMPs) down to a mass of  $45\text{MeV}/c^2$  by exploiting the Migdal effect. I will present recent results and prospects for the ongoing DM searches. Recently, the Karlsruhe Tritium Neutrino experiment KATRIN has released its first result on the neutrino mass (arXiv:1909.06048). Neutrinos play an important role in the structure formation of the early Universe, and sterile neutrinos are a viable candidate for DM. I will therefore also shortly report on KATRIN and its measurements.