

DANAE – A new effort to directly search for Dark Matter with DEPFET-RNDR detectors

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The direct search for dark matter (DM) at the sub-GeV/ c^2 mass scale gained special interest during the last years, mainly motivated by various theoretical models. To search for individual DM-electron interactions in Si-semiconductor devices a readout noise level of less than 1e- RMS is required.

One possible technique which promise a sub-electron noise level is the *Depleted P-channel Field Effect Transistor* (DEPFET) with *Repetitive Non Destructive Readout* (RNDR). Such a low noise level was successfully demonstrated with a single pixel DEPFET-RNDR prototype [1]. The follow-up project DANAE aims to apply the DEPFET-RNDR technique to the direct search for DM-electron interactions. The assembly of a setup with a detector matrix of 64x64 pixels is envisaged. Currently, a dedicated test stand for the optimization of the dark current and the detector characterization is under construction.

In this contribution we will introduce the DEPFET-RNDR technique and the DANAE project. Afterwards, the status of the ongoing R&D work will be reported which is currently focused on the setup construction and the investigation of the temperature dependence of the dark current. Finally we will discuss future prospects of DANAE.

[1] A. Bähr, H. Kluck, J. Ninkovic, J. Schieck and J. Treis, Eur. Phys. J. C77 (2017) 905, arXiv:1706.08666

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