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Integrate Sensor for Spherical Proportional Counter

Wednesday 27 August 2025 18:00 (2 hours)

The Spherical Proportional Counter (SPC), has a broad range of applications such as neutron detection; ßß0v (neutrino physics) and Dark Matter search. The low background detectors like SEDINE (ø=60cm; SPC_60) and SNOGLOBE (ø=140cm; SPC_140), both fabricated at LSM and respectively installed at LSM and SNOLab (Canada, Sudbury), are taking data as light DM detector within NEWS-G collaboration. The next generation of SPC for DM search, will be a 300cm sphere, fully electroformed cupper in Boulby underground laboratory (UK). The goal of this study is to develop a new concept of a sensor with integrated electronic parts to reduce the parasite capacitor and electronic noise (for the SPC DM detection). According to our estimation, the noise should be reduced by 1 or 2 orders of magnitude in our ROI, which is Light WIMP search at low threshold. In this work, the electric field homogeneity simulation and some experimental result of the first prototype will be presented.

Collaboration you are representing

NEWSG

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