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Ultra light dark matter search using the spherical gaseous detector

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The new detector based on a spherical geometry will be presented. The detector consists of a large spherical gas volume with a central electrode forming a radial electric field. A small spherical sensor located at the center is acting as a proportional amplification structure. Sub-keV energy threshold with good energy resolution is achieved and calibration source developed. The very low energy threshold of such detector and versatility of the target (Ar, Ne, He, H) has led to investigations of its potential performance for dark matter searches, in particular low mass WIMP's and Axion like particles. WIMP sensitivity could be pushed down to 100 MeV. Preliminary results obtained with a low radioactivity prototype operated in Underground lab of Modane and typical expected sensitivities will be discussed.

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