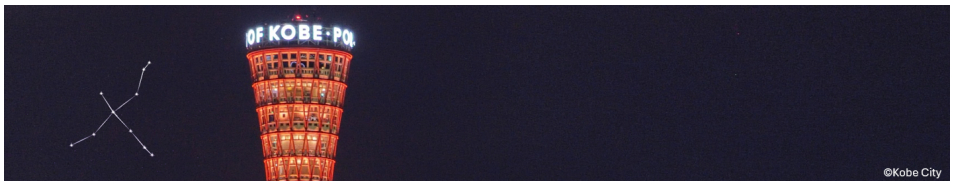

Contribution ID: **10** Type: **not specified**

Light Dark Matter Searches with Spherical Proportional Counters

Monday, 23 February 2026 16:00 (25 minutes)

The spherical proportional counter is a gaseous detector which is utilised for direct dark matter searches by the NEWS-G collaboration. The use of light gaseous targets, including He, CH4, Ne, etc., combined with a low energy threshold, enable access to the mass range from 0.05 to 10 GeV. The detector's simple design also facilitates radio-pure detector construction. Thanks to the radial electric field in the detector and the multi-anode read-out, ACHINOS, both radial and angular position information is available and open the possibility of position and track reconstruction, giving the detector TPC-like capabilities, which will be discussed. The collaboration currently operates a 140cm in diameter detector, constructed at LSM using 4N copper with 500 um electroplated inner layer. The first physics search with this detector will be presented, as will ongoing searches performed at SNOLAB. The potential to achieve sensitivity reaching the neutrino floor in light dark matter searches with a next generation, fully electroformed detector, DarkSPHERE, situated in the Boulby Underground Laboratory, will also be presented. Current efforts underway towards DarkSPHERE will be discussed, for example, establishing a high-purity copper electroforming facility in Boulby.

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Session Classification: Application