

The NEWS-G3 Experiment

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The NEWS-G3 experiment is planning to use a Spherical Proportional Counter (SPC) for the measurement of coherent elastic neutrino-nucleus scattering at a nuclear reactor. The detector consists of a low-radioactivity copper sphere enclosed in a compact shield made of layers of copper, polyethylene and lead. The shield is equipped with an active muon veto made of twelve plastic scintillation panels. A choice of low atomic mass gaseous targets and the SPC's low energy threshold provides high sensitivity to low-energy recoil. A novel multi-anode sensor, named ACHINOS, placed at the center of the SPC, allows for operations at high pressures. The NEWS-G shielding is now installed at Queen's university. Preliminary measurements for the estimation of background levels, veto efficiency and livetime are ongoing. The detector is planned to operate in argon or neon-based mixtures, in a 60 cm diameter low radioactivity copper sphere, which is planned to arrive at Queen's this summer.

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