

# Neutron scattering studies and quenching factor measurements with SPC.

*Friday 19 July 2024 09:38 (17 minutes)*

The NEWS-G experiment, located at SNO lab, aims for direct detection of WIMPs via nuclear recoils using Spherical Proportional Counter (SPC). Accurate measurement of the recoil energy requires knowledge of quenching factor (QF). Our past measurements were performed in Ne+CH<sub>4</sub> gas mixture at 2 bar. Next, we intend to measure QF for different gas mixtures with different detector parameters. To facilitate these in-beam QF measurements, we recently developed a novel technique to study SPC detector characteristics for different detector parameters for neutron scattering based experiments. We are also exploring the possibility to use the tandem accelerator at UdeM, which has the capability to reach neutron beam energy as low as 5 keV.

In this talk, the highlights of our new technique to study neutron scattering with SPC will be presented. Following up with that, the past measurement, current status, and the future plans of the NEWS-G collaboration in measuring QF will be summarized.

## Alternate track

### I read the instructions above

Yes

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