



Contribution ID: 392

Type: **not specified**

## Searching for Dark Matter in the Sun and in the Galactic Centre using Hyper-Kamiokande

*Tuesday, 24 August 2021 14:30 (20 minutes)*

We study the prospects for indirect detection of dark matter (DM) in the Sun and in the Galactic halo using the Hyper-Kamiokande (HyperK) neutrino experiment, currently under construction. We undertook a dedicated simulation of the HyperK detector, which we benchmarked against results from the Super-Kamiokande (SuperK) experiment and HyperK physics projections. For DM annihilation to neutrino final states in the Galactic halo, we find that HyperK will be sensitive to thermal annihilation cross-sections for DM with mass around 20-40 MeV, assuming an NFW halo profile. For neutrino signals produced via the annihilation of DM captured in the Sun, we determined the HyperK sensitivity to the DM spin-dependent scattering cross-section for various standard model final states. We find that HyperK will improve upon current SuperK limits by a factor of 2-3, with a further improvement in sensitivity possible if systematic errors can be decreased relative to SuperK.

**Primary author:** Dr ROBLES, Sandra (The University of Melbourne)

**Presenter:** Dr ROBLES, Sandra (The University of Melbourne)

**Session Classification:** Dark Matter and Astroparticle Physics

**Track Classification:** Dark Matter and Astroparticle Physics