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Dark matter searches using low-energy data of Super-Kamiokande

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Neutrino experiments have long been pivotal in the search for WIMP-induced signals through indirect detection. By analyzing excess neutrinos from various sources, such as the Galactic center, Sun, or Earth, beyond the atmospheric neutrino background, competitive sensitivity to WIMPs with masses as low as 1 GeV has been achieved.
Null results from WIMP searches have led innovative approaches in leveraging current and upcoming neutrino experiments for dark matter searches. For instance, there is growing interest in scenarios predicting boosted dark matter, which can be directly observed in experimental volumes.
The Super-Kamiokande (SK) detector, the world's largest water Cherenkov detector tank, is sensitive to both O(1) - O(100) GeV neutrinos produced by WIMP annihilation and O(1) - O(100) MeV signals expected from boosted dark matter scattering.
This talk will summarize recent findings and ongoing analyses in indirect and direct dark matter searches using the Super-Kamiokande detector. Techniques employed in the pursuit of light dark matter, such as neutron tagging with gadolinium-doped water and the application of Machine Learning, will be discussed.

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