

## A neutrino window to microscopic black holes at IceCube

*Wednesday, 23 September 2020 14:00 (10 minutes)*

If large enough extra dimensions exist, the fundamental gravity scale may be as low as a few TeV to allow for the production of microscopic black holes in collisions of high energy particles. Cosmogenic neutrinos may reach the energy up to tens of EeV, which translates to the center of mass energy of more than 100TeV in neutrino-nucleon scattering, rendering the next generation of neutrino telescopes the ideal places to test large extra dimensions. We identify a number of unique signatures of microscopic black holes as they would appear in future neutrino observatories such as IceCube-Gen2 and the Pacific Ocean Neutrino Explorer, including new event topologies, energy distributions, and unusual ratios of hadronic-to-electronic energy deposition.

**Primary author:** SONG, Ningqiang (Queen's University and Perimeter Institute)

**Co-authors:** Prof. VINCENT, Aaron (Queen's University); Prof. MACK, Katherine (North Carolina State University)

**Presenter:** SONG, Ningqiang (Queen's University and Perimeter Institute)

**Session Classification:** Contributed 12