A SOCIETY OF PHYSICS STUDENTS (SPS)

presents: PHYSICS ALUMNI SERIES SEMINAR

"The Askaryan Radio Array: Searching for Astro-physical Neutrinos in the Antarctic Ice"

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BS-Honors Physics, BS Math, CSU 2016

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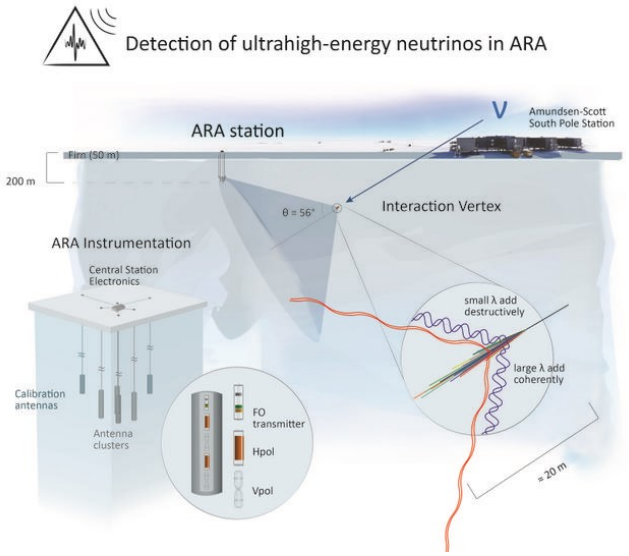
Ultra-high energy cosmogenic neutrinos ($E > 10^{18}$ eV) are most efficiently detected in dense, radio-transparent material. A neutrino travelling faster than light within a medium will generate a shower of charged particles, which in turn emit a cone of coherent radiation in radio and microwave via the Askaryan effect. The Askaryan Radio Array is a grid of antennas extending roughly 200 meters below the surface of the ice near the geographic South Pole, whose ice is the ideal medium for this observation, and can detect neutrinos ranging from 10^{17} eV to 10^{20} eV. Its goal is to detect neutrinos above the Greizen-Zatsepin-Zuzmin (GKZ) limit of 5 x 10^{19} eV, which is the upper limit on cosmic ray photons. These GZK neutrinos, which are unaffected by magnetic fields and gravity, provide a way to potentially uncover the sources of cosmic rays.



ZOOM: https://csuohio.zoom.us/j/6486738408

WHEN 11:30 – 12:20

Tuesday, November 24, 2020