

The Trinity VHE Neutrino Observatory

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The recent detection of potential point sources of astrophysical neutrinos by the IceCube observatory has led to renewed interest in developing next-generation techniques for very to ultra-high-energy neutrino astronomy. The Trinity Observatory, employing an optical technique for detecting tau-air showers induced by Earth-skimming PeV neutrinos, is proposed to fill in the energy gap between the IceCube observatory and UHE radio neutrino detectors. The full-scale Trinity Observatory will use a network of wide Field of View (FoV) telescopes located on high prominence mountain tops to observe tau-neutrinos passing through the Earth's crust. In this talk, we describe the Trinity concept, including optics, electronics, and site considerations, and present the expected sensitivity of the observatory. We describe the capability of enormous Trinity detector volume to explore the origin of $1-10^4$ PeV energy astrophysical neutrinos, and synergies with future radio and in-ice optical neutrino observatories. This talk concludes with a discussion of the Trinity Demonstrator Prototype detector, which is under construction for deployment at the top of Frisco Peak, Utah, USA, in Fall 2022.

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