Contribution ID: **107** Type: **Oral**

Radio detection of high energy neutrinos

Tuesday, 18 June 2024 12:20 (15 minutes)

Radio detection of neutrinos is a promising technique to achieve the gigantic detection volumes required to measure neutrinos at energies beyond the PeV-scale flux established by IceCube. It relies on the geomagnetic (in air) and charge excess (dominant in dense media) emission following a particle cascade of secondaries of a neutrino interaction. Several detector topographies are currently being studied: The Earth-skimming tau neutrino detectors in mountainous regions, e.g. BEACON, TAROGE and GRAND, aim to measure the radio emission from air showers. RNO-G and the planned radio array of IceCube-Gen2 exploit the polar ice and its large attenuation length at radio frequencies to detect neutrino induced particle cascades in ice and the subsequent Askaryan emission. The balloon-borne PUEO (successor to ANITA) accesses both air-shower and in-ice detection channels at energies >1e18eV. In this contribution I will review the current status of the radio neutrino detection, highlight future experimental efforts, and elaborate on open questions and future experimental challenges.

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Session Classification: Astrophysical Neutrino