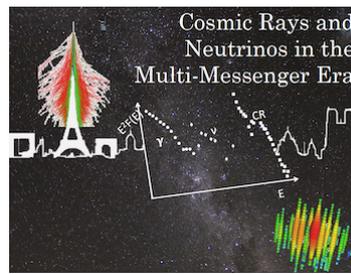


Cosmic Rays and Neutrinos in the Multi-Messenger Era



ID de Contribution: 100

Type: Poster

Preparing to Observe the Next Galactic Supernova with IceCube

The next Galactic supernova will be a once-in-a-lifetime opportunity for multi-messenger astronomy. A core collapse will produce a neutrino burst visible hours to days before electromagnetic radiation from the explosion, so the burst will provide an early warning for optical follow-up and offer valuable insight about the proto-neutron star. Since local supernovae are exceedingly rare, it is critical that neutrino detectors provide prompt alerts after the arrival of a burst. The IceCube Neutrino Observatory is currently the world's largest neutrino detector and is operating with >99% uptime, making it a crucial component of the worldwide network of detectors known as the SuperNova Early Warning System (SNEWS). We will discuss the sensitivity of IceCube to supernovae near the Milky Way and describe the "data challenges" used to ensure the readiness of the detector. We will also discuss the coordination of IceCube alerts with other neutrino detectors in SNEWS.

Related session

Multi-messenger

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