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A multi-cubic-kilometer neutrino telescope in the Western Pacific Ocean

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IceCube's groundbreaking discovery of an all-flavor diffuse, extragalactic neutrino flux has ignited a new era in astrophysics. This revelation, coupled with the identification of potential neutrino sources, has spurred the development of next-generation neutrino telescopes with significantly enhanced sensitivity. These upcoming detectors aim to decipher the enigma behind the diffuse neutrino flux sources, unveil the origin of cosmic rays, and search for physics beyond the Standard Model over cosmic scales. Amid the global efforts to construct advanced neutrino observatories, a telescope situated near Earth's equator uniquely offers access to the entire neutrino sky. In this talk, we will discuss a successful pathfinder experiment, which has identified and characterized a promising site in the Western Pacific Ocean (northwest of South China Sea). We will also present the conceptual design of the future TRIDENT neutrino telescope, its key performance and projected timelines.

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