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The Pacific Ocean neutrino experiment: new developments and physics case

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The study of cosmic neutrinos will open new discovery opportunities in elementary and astro-particle physics in the next decades, when several new neutrino telescopes in the northern hemisphere will come online. One of these detectors is the Pacific Ocean Neutrino Experiment (P-ONE), a multi-cubic kilometre detector off the coast of Vancouver Island, British Columbia. The first full line of P-ONE is set to be deployed by summer 2025 and will be followed by the demonstrator phase the subsequent years. The full detector is planned to be operational by the end of the decade joining the network of neutrino telescopes scattered across the world, pushing us into a new era of high-energy neutrino astronomy. In this talk I will present the current status of the experiment and its expected performance, along with sensitivity studies focusing on the physics of the galactic centre as a laboratory for particle and astrophysics.

Author: CRUDELE, Beatrice (UCL)

Presenter: CRUDELE, Beatrice (UCL)

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