

Sedimentation and Biological Fouling at the future site of the Pacific-Ocean Neutrino Experiment

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The Pacific-Ocean Neutrino Experiment (P-ONE) is a high energy neutrino telescope under development off the coast of Vancouver Island, Canada. A construction site has been chosen in the Cascadia Basin, a large flat seabed on the Juan de Fuca plate. The P-ONE collaboration previously operated the STRings for Absorption length in Water (STRAW) and STRAW-b pathfinder missions. These instruments measured the water attenuation length and background light spectrum and were deployed to the Cascadia Basin site in 2018 and 2020 respectively. Both moorings were retrieved in July 2023. Measurements were made of the evolution of the optical surfaces on STRAW, showing a fouling effect on upwards facing modules near the seafloor. A pre-recovery survey and the retrieval showed both a buildup of sediment as well as colonization by marine organisms, and samples were taken for identification. The change in transmission efficiency has been measured across the five year lifespan of the original STRAW detector. Biologically inspired models have been used to model and help understand the time dependence of fouling on the glass housing. This contribution covers the measurements, modelling and identification of sedimentation and biological fouling in the P-ONE pathfinders as well as the ongoing development of mitigation strategies.

Poster prize

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