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Development of monitoring and control strategies for biofouling and sedimentation for the Pacific-Ocean Neutrino Experiment

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The Pacific-Ocean Neutrino Experiment (P-ONE) is a new neutrino telescope that is currently under construction in the North Pacific Ocean. The future location of the detector is the Cascadia Basin, a flat 2660 m deep region of ocean off the coast of Vancouver Island, Canada. P-ONE will be made up of one kilometre long strings of optical instrumentation. The collaboration is currently working towards the assembly and deployment of the first string. A pathfinder instrument took data at the P-ONE site from August 2018 until July 2023. Data from the pathfinder shows that upwards facing instruments lost some transparency over its 5 year lifetime. This is attributed to the deposition of marine sediments and subsequent colonization by biological organisms, collectively referred to as biofouling. Pathfinder results concerning biofouling will be discussed in this contribution. In addition, we will discuss the usage of surface modifying coatings for biofouling mitigation on future P-ONE instruments. The inclusion of this technology is novel for neutrino telescopes and a candidate coating will be tested in-situ on the first string.

Collaboration(s)

P-ONE Collaboration

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