

International workshop. Cetacean echolocation and outer space neutrinos:  
ethology and physics for an interdisciplinary approach to underwater  
bioacoustics and astrophysical particles detection



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## SMO acoustic array: calibrations and first results

*Friday, 18 October 2013 17:00 (15 minutes)*

The SMO (Submarine Multidisciplinary Observatory) project consists of a 3D array of 14 broad-band (10 Hz - 70 kHz) hydrophones, installed on board the NEMO Phase-II detector, a prototype of a detection unit for an underwater neutrino telescope. Thanks to very low noise acquisition electronics and broadband hydrophones, SMO is suitable for both studies of astrophysical neutrino detection and identification of biological signals (namely mammals' sounds). Dedicated tests carried out at the water-pool facility of CNR-IDASC and NATO-URC laboratories allowed full characterization of the detector and in particular its sensitivity as a function of pressure. These measurements, also, shown that acoustic data can be effectively time-stamped underwater with a known and measurable latency (time delay) with respect to the GPS absolute time provided by the shore station master clock. In view of a km<sup>3</sup>-scale neutrino telescope (KM<sup>3</sup>NeT), this feature allows to perform preliminary studies on acoustic neutrino detection searching for acoustic impulsive signals in coincidence with the optical events reconstructed by the Cherenkov detector. In this work the tests carried out to measure the performances of the SMO acoustic array are described and first results are reported.

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