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Development of a compact acoustic calibrator for ultra-high energy neutrino detection

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With the aim to optimize and test the acoustic detection of ultra-high energy neutrinos in underwater telescopes, we have developed a compact acoustic transmitter array able to reproduce the acoustic signature of UHE neutrino based on the parametric acoustic sources effect. We present different R&D studies to show the viability of the parametric sources technique to deal with the difficulties of generating the acoustic signal (a very directive transient bipolar signal with 'pancake' directivity). The design, building and characterization of the prototype is described, including theoretical simulations of several waveforms propagation at km range the experimental measures in a pool. Following these studies, next steps will be to test the device in situ, in underwater neutrino telescopes or from a vessel in Sea Campaigns.

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