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Development of an acoustic transceiver for the KM3NeT positioning system

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In this paper we describe the acoustic transceiver developed for the KM3NeT positioning system. The acoustic transceiver is composed of a commercial free flooded transducer, which works mainly on the 20-40 kHz region and withstands high pressures (up to 500 bars). A developed sound emission board, which has been designed to be adapted to the specific transducer and fulfill all the requirements: low power consumption, high intensity for emission, low intrinsic noise, arbitrary signals for emission and the capacity of acquiring the receiving signals with very good timing precision. Moreover, a simplified version of the transceiver might be used for the receivers of the KM3NeT positioning system as well for the large number of units needed.
The results of the different tests made to the transceiver in the laboratory are described, as well as, the activities for its integration in the Instrumentation Line of ANTARES and in the NEMO tower for the in situ tests.

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