

## The INFN-TUM calorimeter for the sterile neutrino hunt

The SOX (Short distance neutrino Oscillations with BoreXino) experiment aims to confirm or confute the eV mass sterile neutrino hypothesis by the standard disappearance technique and possibly by the direct observation of the oscillation pattern. Both the measurements will be performed with a very intense (5 PBq)  $^{144}\text{Ce}$ - $^{144}\text{Pr}$  antineutrino source placed under the large scale and very low radioactive background Borexino detector at the Gran Sasso Laboratory (LNGS) in Italy. The knowledge of the source activity with better than 1% accuracy is fundamental for the disappearance measurement and it will be achieved by a carefully designed and precisely calibrated calorimetric apparatus in which the source together with its biological tungsten alloy shield will be inserted for 6 days of measurement before the 1.5 years of data taking with Borexino.

In the last three years the Istituto Nazionale di Fisica Nucleare of Genoa (INFN) and the Technical University of Munich (TUM) groups developed and built a compact vacuum calorimeter, where the activity is measured through a very precise knowledge of the heat released in a water coil enveloping the source by measuring the water mass flow and the temperature difference between the input and output with a very high accuracy.

In the poster a detailed description of the apparatus will be presented and the final results of the calibration measurements performed with an electrical mockup source will be shown. The precision expected for the final measurement with the  $^{144}\text{Ce}$ - $^{144}\text{Pr}$  radioactive source will be discussed as well.

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