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The high precision calorimetric measurement of the 144Ce activity in the SOX experiment

Tuesday, 6 October 2015 15:30 (15)

In order to perform a resolutive measurement to clarify the neutrino anomalies and to observe possible short distance neutrino oscillations, the SOX (Short distance neutrino Oscillations with BoreXino) experiment is under construction. In the first phase, a 100 kCi 144Ce-144Pr antineutrino source will be placed under the Borexino detector at the Laboratori Nazionali del Gran Sasso, in center of Italy, and the rate measurement of the antineutrino events, observed by the very low radioactive background Borexino detector, will be compared with the high precision (<1%) activity measurement performed by two calorimeters just before the source insertion in the tunnel under the Borexino. The 144Ce source will be embedded in a 19 mm thick tungsten shield and both the calorimeters have been conceived for measuring the thermal heat, absorbed by a water flow. In the presentation the two calorimeters will be described in details, paying particular attention to the techniques adopted to minimize the heat losses and to satisfy thermal and safety constrains. The status of the construction and the preliminary results performed with a mock-up heater will be also shown.

Presentation type

Section talk (10+5 min)

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