

Report on SPALAX-NG validation tests and performances

The first industrial prototype of the new Generation SPALAX system (SPALAX-NG) has been delivered at CEA in December 2017. This system is dedicated to continuous detection and measurement of xenon radioisotopes in the atmosphere. It has been designed to upgrade the current SPALAX system on the IMS network. After several months of optimization, an official validation test period has been launched with PTS in October 2018 for 6 months at the developer facility (CEA/DIF). After completion of this first period, the outstanding performances of the system are well established with detection limits of ~ 0.2 mBq.m⁻³ (8 hour collection) for the four relevant radioxenon isotopes. Taking benefit of the high resolution and the low background of the new spectrometer, the system is able to separate unambiguously the contribution of each isotope. These performances give a new perspective on the radioxenon background knowledge in Western Europe.

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