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# Investigations of the characteristics of installation for the measurement of low activities of 37Ar based on the detection of liquid argon scintillation

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One of the most conclusive evidence of a violation of CTBT is the presence in the subsoil air of elevated concentrations of 37Ar radionuclide, which is formed in large quantities in the interaction of neutrons with calcium, which is part of rocks. Traditionally, to measure the activity of 37Ar, proportional gas counters are used, which are filled with a counting gas prepared from samples of argon with the addition of methane. Further reduction of the detection limit of 37Ar is limited by the difficulty of a significant increase of argon sample volume placed in a proportional counter. Installation for the detection of argon-37 low activities based on the liquid scintillation principle is being developed at the Radium Khlopin Institute under contract with CTBTO. The role of the scintillator in this installation is performed by the liquefied preparation of extracted from soil air argon itself. The use of liquefied argon samples allows to multiply the volume of the measured samples without increasing the size of the measuring cell and shields elements and allows to significantly reduce the detectable limits of 37Ar. Installation is currently being tested and the results are presented in this presentation.

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