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Experimental limit of the atmospheric concentration of ^{42}Ar JEREMY KEPHART, ROSARA KEPHART, JUDAH FRIESE, Pacific Northwest National Laboratory, LLAMA TEAM — Any small amount of radioactivity can have significant implications for many large scale physics experiments that are searching for unique signals such as those from double beta decay and the hunt for dark matter. These ultra-low background measurements have a need to understand all possible sources of background present in the system. ^{42}Ar has been identified as a possible small source of background due to its presence in the atmosphere and in liquid argon. This work combines ultra-sensitive separations with ultra-low background detection techniques to experimentally determine a new quantitative upper limit of ^{42}Ar in the atmosphere

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