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Isotopic Dependence of Vapour Pressure in Xenon

The possible need of nearly 50 tonnes of 136Xe to search for neutrinoless double beta decay motivates an investigation of doing this enrichment using distillation. This requires a value for the vapour pressure isotopic effect (VPIE) of xenon. The main result of this work is a precise measurement of this VPIE using cryogenic distillation. The still is calibrated with argon and krypton. The VPIE dependence across all stable isotopes of the same element is found approximately linear and consistent with theoretical expectations.

Mini-abstract

We present a precise measurement of the vapour pressure isotopic effect of xenon for the first time.

Primary authors: Prof. LICCIARDI, Caio (Laurentian University); Prof. SINCLAIR, David (Carleton University)

Co-authors: Mrs ALAMRE, Amal (Carleton University); Mr DEATH, Brandon (Carleton University); Prof. BADHREES, Ibtesam (Carleton University)

Presenter: Prof. LICCIARDI, Caio (Laurentian University)

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