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The Archimedes Experiment, results on the thermal modulation system.

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The scientific objective of Archimedes is to weigh the vacuum, i.e. to investigate the role of the interaction of vacuum fluctuations with the force of gravity, using a high sensitivity balance. It will measure the small weight variations induced in two high temperature superconductors that have the property of “trapping” or “expelling” vacuum energy when their temperatures are greater or lower than their critical temperatures (thermal modulation). Only the radiative heat exchange mechanism must be used to remove or add thermal energy to the sample as it must be isolated from any external interaction that could add energy other than the vacuum one. A cryogenic prototype at liquid nitrogen temperature is being optimised for performing the thermal modulation with help of a FEM analysis. The characterisation of different high temperature superconductors is also an important study to be explored. Most recent results will be presented.

Submitted on behalf of a Collaboration?

Yes

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