

Lundi 19 septembre 11h00

CEA-Saclay Bât 141, salle André Berthelot

Gravitational and centrifugal quantum states of neutrons and anti-hydrogen atoms

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Two related physical phenomena have recently been observed : quantum states of ultracold neutrons in the gravitational field above a flat mirror, and quantum states of cold neutrons in an effective centrifugal potential in the vicinity of a concave mirror. The two phenomena are similar in terms of their associated experimental methods and mathematical representations as well as in terms of their applications in particle physics, quantum optics, and surface physics. It is curious that the measurement of the near-surface quantum states of these two types is the first direct demonstration of the weak equivalence principle for a massive object in a quantum state. Analogous experiments using anti-hydrogen atoms are not only feasible but also provide a tool for precision measurements of their gravitational properties.

Le café sera servi 10 minutes avant.

NB : La présentation d'une pièce d'identité est exigée à l'entrée du centre. Tous les auditeurs extérieurs sont priés de prévenir à l'avance Emilie Chancrin, tél. 01 69 08 23 50, e-mail : emilie.chancrin@cea.fr. (U.E. : délai de 24 h, hors U.E. : délai de 4 jours).