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Missions spatiales en physique fondamentale/Space missions for fundamental physics

### Cold atoms in space and atomic clocks: ACES

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#### Abstract

In this article, the interest of space environment for cold atoms is outlined. After a brief review of cooling techniques and Bose-Einstein condensation, the case of atomic clocks in microgravity is discussed. The scientific objectives of the European mission ACES are presented. ACES will fly onboard the international space station in 2005-2006.

#### Résumé

Dans cet article, l'intérêt de l'environnement spatial pour les atomes froids est souligné. Après une brève revue des techniques de refroidissement et la condensation de Bose-Einstein, nous discutons le cas des horloges atomiques en micro-gravité. Les objectifs scientifiques de la mission européenne ACES sont présentés. ACES sera embarquée à bord de la station spatiale internationale en 2005 et 2006.



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## Keywords

ultracold atomic gases; atomic clocks; time and frequency standards; general relativity; microgravity

## Mots-clés

gaz atomiques ultrafroids; horloges atomiques; étalons de temps et de fréquence; relativité générale; microgravité

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