

Accuracy for a commercial cold-atom microwave clock

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ABSTRACT

We present a commercial compact atomic clock using the isotropic light cooling of rubidium atoms, a Ramsey microwave interrogation, as well as an absorption detection. It achieved an extreme stability of $3.2 \cdot 10^{-13}$ at 1 second and $1 \cdot 10^{-15}$ over more than a month. These performances are good enough to tend towards an accuracy project for this system.

In this presentation, I will first speak about the experiment, before getting into further details about its short-term and long-term performances. I will then talk about the characterization of a few systematic effects, such as the quadratic Zeeman effect or the microwave phase transients. I will finally talk about our current work, which consists in imaging the cold-atoms distribution, in order to reach a better understanding of its contribution to the accuracy budget of the MuClock.

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