

Precision measurement of rotational transitions to test fundamental laws of physics

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Abstract

We develop a versatile device for precision spectroscopy of molecular energy transitions aimed at measuring a CO⁺ rotational transition. The experiments are expected to check if fundamental physical constants have ever changed in space and time, that can help to verify existing cosmological theories. The device will contain a combination of laser setups and a vacuum system to perform ions creation, and their sympathetic laser cooling with Ca⁺ ions.

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