

Original Paper

Frequency and Intensity Control of Lasers to Cool and Control Caesium Atoms

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Abstract

Lasers are now being routinely used to control the atomic motion. We describe the usage of narrow linewidth lasers to capture, cool, manipulate and detect the caesium atoms. This control helps in increasing the interaction time between atoms and microwave field in a cesium atomic clock. This paper describes the optics in detail for Cesium Fountain of NPLI. The aim of this work is to build a fountain frequency standard with a relative uncertainty below 10^{-15} .

Keywords

Atom manipulation – Cooling and trapping of atoms – Frequency standards – Atomic clocks – Measurement units and standards – Diode lasers