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量子光学

85Rb和87Rb双磁光阱的同时实现及特性研究

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摘要： 双磁光阱的同步实现是利用冷原子干涉仪检验等效原理的重要实验基础之一。我们采用高频声光调制移频的方案获得了冷却囚禁85Rb和87Rb两种原子的激光，进而同步实现了两种原子的磁光阱。在此基础上，研究了双磁光阱中原子数与冷却光参数的关系，优化了实验参数，双磁光阱中两种原子的数目均达到109。

关键词： 量子光学 双磁光阱 激光冷却 冷原子干涉仪 等效原理检验

Realization of a dual magneto-optical trap of 85Rb and 87Rb

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Abstract: Synchronous realization of two magneto-optical traps is one of the fundamental technologies of testing Einstein’s Equivalence Principle by using atom interferometers. We used high frequency acousto-optic modulators to achieve the lasers for trapping 85Rb and 87Rb simoutaneously, and realized a dual magneto-optical trap of 85Rb and 87Rb. Based on the dual magneto-optical trap, the dependence of atom numbers in the dual magneto-optical trap on parameters of cooling laser are investigated, and optimized experimental data are obtained. The number of both species reaches to 109 in the dual magneto-optical trap.

Keywords: quantum optics dual magneto-optical trap laser cooling cold atom interferometer equivalence principle test

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