Quantum Physics

Quantum metrology to probe atomic parity violation

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(Submitted on 13 Jan 2009)

An entangled state prepared in the decoherence free sub-space together with a Ramsey type measurement can probe parity violation in heavy alkali ions like Ba+ or Ra+. Here I propose an experiment with Ba+ ions as an example to measure the small parity violating effect in this system. I will also show that the accuracy of such an experiment can be three orders of magnitude better for a day of measurement as compared to the single ion experiment.

Comments: 4 pages, 3 figures
Subjects: **Quantum Physics (quant-ph)**
Cite as: **arXiv:0901.1726v1 [quant-ph]**

Submission history

From: Manas Mukherjee [view email]
[v1] Tue, 13 Jan 2009 09:05:37 GMT (71kb)

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