

Abstract Submitted
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Rotation Measurement with a K-Rb-²¹Ne Atomic Spin Co-magnetometer Gyroscope¹ YAO CHEN, Beihang University, SHENG ZOU, Southeast University, LIHONG DUAN, JIANCHENG FANG, Beihang University — Co-magnetometers based on K-³He and K-Rb-²¹Ne [1] have been used to test of CPT symmetry. For the K- Rb-²¹Ne co-magnetometer, due to the gyroscopic effect of the ²¹Ne nuclear spin, it can also be used to sense small rotation. For inertial navigation application, ²¹Ne atoms, whose gyromagnetic ratio is an order of smaller than ³He, is better to be used to sense rotation. The spin projection noise of a K-Rb-²¹Ne co-magnetometer with measurement volume of 1cm³ could be on the order of 10⁻¹⁰ rad/s/Hz^{1/2}. A K-Rb-²¹Ne co-magnetometer gyroscope has been designed. It is under constructing in our laboratory and the rotation of the earth should be measured by this apparatus. We also have made alkali vapor cells filled with K and Rb atoms, whose mole fraction ratio is controlled by analytical balance operated in the anaerobic glove box.

[1] M. Smiciklas, J. M. Brown, L. W. Cheuk, S. J. Smullin, and M. V. Romalis, Phys. Rev. Lett. 107, 171604 (2011).

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