

Abstract Submitted
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Progress toward improved symmetry tests with a dual noble gas maser ALEX GLENDAY, MATTHEW ROSEN, DAVID PHILLIPS, RONALD WALSWORTH, Harvard-Smithsonian — Measurements of spin transitions in atomic systems can be sensitive to violations of Lorentz and CPT symmetry through Zeeman frequency variations as the direction or velocity of the system changes with respect to an inertial frame. We report improved performance of the $^{129}\text{Xe}/^3\text{He}$ Zeeman maser as a device for improved tests of such fundamental symmetries. Improved temperature and mechanical stability of the maser as well as signal optimization have led to an order of magnitude improvement in frequency noise and stability. Comagnetometry of the two noble gases also enables precision measurement of new forces that couple to the spin of the neutron.

Ronald Walsworth

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