Abstract Submitted
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Nuclear Matrix Elements for Tensor Interactions that Violate Local Lorentz Invariance[1] ALEX BROWN, VLADIMIR ZELEVINSKY, National Superconducting Cyclotron Laboratory and Department of Physics and Astronomy, Michigan State University, East Lansing, Michigan 48824-1321, MICHAEL ROMALIS, Department of Physics, Princeton University, Princeton, New Jersey, 08544 — The principle of local Lorentz invariance can be tested by measurements using a ^{21}Ne-Rb-K comagnetometer [M. Smiciklas, J. M. Brown, L. W. Cheuk, S. J. Smullin and M. V. Romalis, Phys. Rev. Lett. **107**, 171604 (2011)]. This experiment puts strong limits on the possible anisotropy in the maximum attainable velocity for a massive particle. In order to convert from magnetic field units one needs the nuclear matrix element of the quadrupole momentum tensor operator proportional to $2p_z^2 - p_x^2 - p_y^2$ for the $3/2^+$ ground state of ^{21}Ne. In the paper above the simple $d_{3/2}$ single-particle model was used. We use the full sd-shell model wavefunctions. We also consider the effect of core polarization. Results for ^{131}Xe and ^{201}Hg are also considered.

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