

Abstract Submitted
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Constraining possible time variations of the gravitational constant through terrestrial nuclear laboratory data¹ PLAMEN KRASTEVA, BAO-AN LI, Texas A&M University-Commerce, FRANCESCA SAMMARRUCA, University of Idaho — A possible time variations of the gravitational constant was suggested by Dirac and some modern cosmological models. In contrast with the other fundamental constants, as the precision of measurements increased, the discrepancy among the empirical values of G also increased which led to a rise of the relative uncertainty of the present value for the gravitational constant. As suggested in literature, such hypothetical time variations of G can perturb the equilibrium density of a neutron star causing *gravitochemical heating*. Using available terrestrial laboratory data on isospin diffusion in heavy-ion reactions at intermediate energies, through the gravitochemical heating formalism, we predict the surface temperature of a neutron star. When compared with the surface temperature of the nearest millisecond pulsar, PSR J043-4715, this constraint provides a more restrictive value of time variation of G .

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