

Abstract Submitted
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Relativistic effective interaction for nuclei, giant resonances, and neutron stars FARRUKH J. FATTOYEV, The Florida State University, CHARLES J. HOROWITZ, Indiana University, JORGE PIEKAREWICZ, The Florida State University, GANG SHEN, Indiana University — A new relativistic effective interaction that is simultaneously constrained by the properties of finite nuclei, their collective excitations, and neutron star properties is introduced. It is shown that by adjusting two of the empirical parameters of theory, one can efficiently tune the neutron thickness of ^{208}Pb and the maximum mass of the neutron star. This new effective interaction referred to as the IU-FSU interaction, is fitted to a modest neutron thickness of $R_n - R_p = 0.16$ fm in ^{208}Pb and a moderate maximum neutron star mass of $M_{max} = 1.94M_{Sun}$.

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