

Parity-violating asymmetry and dipole polarizabilities in atomic nuclei: how do they reconcile with each other?

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In the recent years, attention has been paid to a careful measurement of the dipole polarizability and parity violating asymmetry in medium and heavy mass nuclei such as ^{48}Ca and ^{208}Pb [1-4]. These two observables, as it already happened for the neutron skin thickness, are thought to be particularly sensitive to the properties of the nuclear equation of state at densities around nuclear saturation [5]. Hence, the interest in the low energy nuclear physics community to foster the needed experimental and theoretical developments to accurately study these two observables.

In this contribution I will briefly overview our past and recent theoretical analysis of the parity violating asymmetry and electric dipole polarizability [6-10].

- [1] D. Adhikari et al., Phys. Rev. Lett. 126, 172502 (2021)
- [2] D. Adhikari et al., Phys. Rev. Lett. 129, 042501 (2022)
- [3] A. Tamii et al., Phys. Rev. Lett. 107, 062502 (2011)
- [4] J. Birkhan et al., Phys. Rev. Lett. 118, 252501 (2017)
- [5] X. Roca-Maza, N. Paar, Prog. Part. and Nucl. Phys. 101, 96-176 (2018).
- [6] X. Roca-Maza, M. Centelles, X. Viñas, M. Warda, Phys. Rev. Lett. 106, 252501 (2011).
- [7] P.-G.Reinhard, X. Roca-Maza, W. Nazarewicz, Phys. Rev. Lett. 127, 232501 (2021).
- [8] P.-G.Reinhard, X. Roca-Maza, W. Nazarewicz, Phys. Rev. Lett. 129, 232501 (2022).
- [9] X. Roca-Maza, et al. Phys. Rev. C 88, 024316 (2013).
- [10] X. Roca-Maza, et al. Phys. Rev. C 92, 064304 (2015).

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