



Contribution ID: 34

Type: Poster

Disentangling the ^{186}Hg puzzle

Neutron-deficient Hg nuclei have been the subject of intensive experimental and theoretical research since the 1970s. Actually, the first direct evidence for shape coexistence near the $Z=82$ shell closure was obtained for neutron-deficient mercury isotopes by means of isotope shift measurements [1]. These measurements showed that there is a unique staggering in the variations of the mean-square charge radii pointing to shape effects and shape coexistence. Very recently these measurements were revisited at ISOLDE marking the limits of this unique behaviour [2]. In this context studying the shape of the $^{182,184,186}\text{Hg}$ even-even systems is of particular interest, since they lie next to the systems where the staggering takes place.

The beta decay of ^{186}Hg has been studied at ISOLDE using the total absorption spectrometer LUCRECIA in order to infer the ground state shape of this nucleus from the distribution of the beta strength in the daughter [3], in a similar fashion to the works [4-8]. This kind of study is feasible whenever there are different patterns in the beta strength depending on the shape of the parent nucleus (see for example the theoretical works [9-12]). In this contribution we will present the challenging analysis of this experiment and its possible interpretation.

[1] J. Bonn, et al., *Z. Phys. A* 276 (1976) 203; G. Huber et al., *Z. Phys. A* 276 (1976) 187; J. Bonn, et al. *Z. Phys. A* 276 (1976) 203

[2] B. A. Marsh et al., *Nat. Phys.* 14, 1163 (2018).

[3] IS538 Proposal: Shape effects in the vicinity of the $Z=82$ line: study of the beta decay of $^{182,184,186}\text{Hg}$. Spokespersons: A. Algora, L.M. Fraile, E. Nacher

[4] E. Poirier et al., *Phys. Rev. C* 69 (2004) 034307

[5] E. Nacher et al., *Phys. Rev. Lett.* 92 (2004) 232501

[6] A. Perez-Cerdan et al., *Phys. Rev. C* 84, 054311 (2011).

[7] J. A. Briz et al., *Phys. Rev. C* 92, 054326 (2015).

[8] M. E. Estevez Aguado et al., *Phys. Rev. C* 92, 044321 (2015).

[9] I. Hamamoto and X. Z. Zhang, *Z. Phys. A* 353, 145 (1995); F. Frisk, I. Hamamoto and X. Z. Zhang, *Phys. Rev. C* 52, 2468 (1995)

[10] P. Sarriguren, E. Moya de Guerra, A. Escuderos and A. C. Carrizo, *Nucl. Phys. A* 635 55 (1998); P. Sarriguren, E. Moya de Guerra and A. Escuderos, *Nucl. Phys. A* 658 (1999) 13; *Nucl. Phys.* 658 (1999) 13; *Phys. Rev. C* 64 (2001) 064306

[11] O. Moreno et al., *Phys. Rev. C* 73, 054302 (2006)

[12] J. M. Boillos and P. Sarriguren, *Phys. Rev. C* 91, 034311 (2015)

Authors: Dr ALGORA, Alejandro (IFIC (CSIC-Univ. of Valencia)); Dr GANIOGLU, Ela (Istanbul University); Prof. SARRIGUREN, Pedro (IEM, CSIC); FOR THE IS539 COLLABORATION

Presenter: Dr ALGORA, Alejandro (IFIC (CSIC-Univ. of Valencia))

Session Classification: Poster Session