Contribution ID: **36** Type: **Talk**

# Isomeric states at the extremes of proton stability

*Monday, 2 May 2022 12:30 (15 minutes)*

The observation of proton radioactivity from nuclei beyond the proton drip line, provides a way to probe nuclear structure at the limits of stability. The existence of long-lived isomeric states can encourage the emission of a proton besides the ground state emission, and thus provide extra experimental information on exotic nuclei, that are difficult to produce and observe, due
to the very small production cross sections, and instability.
In fact, the first time that a decay from proton emission was observed was just from an high spin isomeric state in 53Co [?, ?]. From that discovery, many proton emitters were found mapping a large portion of the proton drip line below element Z=83, and imposing constraints on the path of nucleosynthesis in explosive astrophysical scenarios. Amongst the observed decays, a few were from isomeric states.
It is the purpose of this talk to discuss some examples of isomeric states of proton drip line that decay by proton emission, and show that, from the theoretical interpretation of the decay data from these states[?, ?, ?, ?, ?], it is possible to identify nuclear structure properties of the emitter, and deduce constraints to the astrophysical processes.

1. K.P. Jackson, C.U. Cardinal, H.C. Evans, N.A. Jelley, J. Cerny Phys. Lett. B33 (1970) 281.
2. J. Cerny, J.E. Esterl, R.A. Gough, R.G. Sextro Phys. Lett. B33 (1970) 284.
3. L.S.Ferreira, E.Maglione, P.Ring, Phys. Lett. B701 (2011) 508.
4. P. Arumugam, L. S. Ferreira, E. Maglione, Phys. Lett. B680 (2009) 443.
5. M.Taylor, D. M. Cullen, M. G. Procter, A. J. Smith, et al. Phys. Rev. C 91 (2015) 044322.
6. P. Hodge, D. M. Cullen, M. J. Taylor, et al. Phys. Rev. C 94 (2016) 034321.
7. Swati Modi, M. Patial, P. Arumugam, L. S. Ferreira, and E. Maglione Phys. Rev. C 96 (2017) 064308

**Primary authors:** S. FERREIRA, Lidia (CeFEMA, Instituto Superior Tecnico, Univ Lisboa); Prof. MAGLIONE, Enrico (CeFEMA, Instituto Superior Tecnico)

**Presenter:** S. FERREIRA, Lidia (CeFEMA, Instituto Superior Tecnico, Univ Lisboa)

**Session Classification:** Nuclear Structure II