

Nuclear Data Project

S. Lalkovski

Nuclear Engineering Dept., Faculty of Physics, St. Kl. Ohridski University of Sofia,
1164 Sofia, Bulgaria

The atomic nuclei placed at the verge of beta stability line are the stepping stones towards exploration of most exotic nuclei. Understanding their structure and decay modes is crucial for the understanding of nuclear matter with extreme neutron to proton ratio. Indeed, in these nuclei very few methods are available to excite, and study, states. As such most of their properties are revealed on the basis of systematics and nuclear models interpretations. It is thus obvious that reliable nuclear data is of paramount importance for model parametrisation and good systematics of various nuclear structure quantities, but also for the needs of other related areas such as astrophysics, medicine, security, archeology etc. A prominent example is the so-called nuclear pandemonium effect which is related to discrepant β -decay feeding distribution due to the use of high resolution data. A lot of experimental effort is now placed to resolve this issue, which is of particular importance for nuclear energy industry given that between 6 and 8% of the energy released during the normal reactor operation is due, indeed, to the β -decay process. Resolving this issue also depends largely on reliable evaluated nuclear data.

In an attempt to provide reliable nuclear data for different communities Nuclear Structure and Decay Data (NSDD) network of evaluators was set fifty years ago. Now several data centres worldwide contribute to the effort, coordinated by the IAEA and the Brookhaven National Lab (USA). The University of Sofia joined the network in 2017. An overview of the activities carried out here will be presented.

References

- [1] S.Lalkovski, J.Timar, Z.Elekes, Nuclear Data Sheets for A=105, *Nuclear Data Sheets* (submitted)
- [2] S.Lalkovski, F.Kondev, Nuclear Data Sheets for A=112, *Nuclear Data Sheets* **124** (2015) 157-412.
- [3] F.Kondev, S.Lalkovski, Nuclear Data Sheets for A=207, *Nuclear Data Sheets* **112** (2011) 707-853.
- [4] F.Kondev, S.Lalkovski, Nuclear Data Sheets for A=200, *Nuclear Data Sheets* **108** (2007) 1471-1582.