



THE AUSTRALIAN NATIONAL UNIVERSITY

# *ENSDF related activities (2019-2022)*

Tibor Kibèdi (ANU)

TK retired in Nov 2020, Continue nuclear data related work at ANU (office, access to Library)

Jackson Dowie: completed PhD in 2021 expressed interest in BrIcc, NNDC contract to work on XUNDL

Bryan Tee: completed PhD in 2022, currently at CSRIO, working on NS\_RadList

## Mass chain evaluations:

172	B. Singh, T. Kibèdi	Review completed (Dec 2018) Final revision in progress (BS)
173	T. Kibèdi	In preparation
174	E. Browne, J.K. Tuli, T. Kibèdi	Z=66-69 (EB, JKT, submitted for review) Z=70-80 (TK in progress)

## Mass Chain review:

- A=162 (Nica, 2022)

## Decay Data for Monitoring Applications:

### Evaluations

- $^{137}\text{Cs}$   $\beta^-$  completed (Aug 2022)
- $^{136}\text{Cs}$   $\beta^-$  in preparation
- $^{131}\text{I}$   $\beta^-$  in preparation

### Review

- $^{105}\text{Sb}$  to be completed 15-Nov-2022,  $^{127}\text{Sb}$   $\beta^-$ ,  $^{143}\text{Ce}$   $\beta^-$

## Table of electronic factors for E0 electron and electron-positron pair conversion transitions (2020Do01)

- ❑  $\Omega_{CE}$  (E0), Z=5-126, based on modified version of CATAR (Pauli et al. 1975Pa26)
- ❑  $\Omega_{IPF}$  (E0), Z=4-100, based on Wilkinson 1969Wi29
- ❑ All atomic shells, fully compatible with BrIcc



Table of electronic factors for E0 electron and electron-positron pair conversion transitions

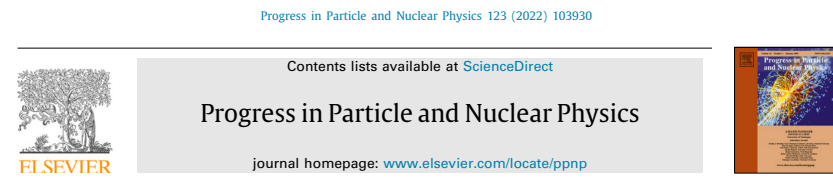
J.T.H. Dowie, T. Kibédi\*, T.K. Eriksen<sup>1</sup>, A.E. Stuchbery

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## Electric monopole transitions in nuclei (2022Ki03)

- ❑ Update of 2005Ki02:  
187 pure E0
- ❑ Evaluation of E0+E2+M1 between J>0 states  
95 mixed E0+E2+M1
- ❑ Analysis based on MC
- ❑  $\Omega_{CE,IPF}$ (E0) from Dowie et al. 2020Do01



Review

Electric monopole transitions in nuclei

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## Codes released and maintained by the ANU

- ❑ BrIcc 2.3e (17-Jun-2020)
- ❑ BrIccMixing 2.3e (14-Aug-2020)
- ❑ GABS (20-Jun-2021)
- ❑ AveTools (10-Dec-2014)

## Codes Under development/testing

- ❑ NS\_RadList & UncTools:  $\alpha$  testing (since Jul-2022)

## More on Thursday morning

- ❑ 2019 TM on Nuclear data on monitoring (IAEA)
- ❑ 2019 GEANT4 workshop (Wollongong)
- ❑ 2019 NSDD (IAEA)
- ❑ 2020 TM on Nuclear data on monitoring (IAEA, remotely)
- ❑ 2020 DDEP workshop (Saclay, remotely)
- ❑ 2021 ENSDF code developments (IAEA, remotely)
- ❑ 2022 TM on Nuclear data on monitoring (IAEA)
- ❑ 2022 ICTP/TRISTE workshop (remotely)
- ❑ 2022 INDC, B. Tee was invited to talk on NS\_RadList

- ❑ Dowie, Kibédi, Eriksen, Stuchbery, Table of electronic factors for E0 electron and electron-positron pair conversion transitions, ADNDT 131 (2020) 101283
- ❑ Kibédi, Gamsworthy, Wood, Electric monopole transitions in nuclei, Prog. Part. Nucl. Phys. 123 (2022) 103930
- ❑ Sampaio, et al., *Simulation of  $^{125}\text{I}$  Auger emission spectrum with new atomic parameters from MCDHF calculations*, J. Quantitative Spectroscopy & Radiative Transfer 277 (2022) 1
- ❑ Bakr S, et al., *A benchmarking study of Geant4 for Auger electrons emitted by medical radioisotopes*, App. Radiation and Isotopes 174(2021)
- ❑ Idrissou, et al., *Targeted radionuclide therapy using auger electron emitters: The quest for the right vector and the right radionuclide*, Pharmaceutics 13, 7(2021) 1-21
- ❑ Tee, et al., *High-resolution conversion electron spectroscopy of the  $i$   $^{125}$  electron-capture decay*, Physical Review C: Nuclear Physics 100, 3(2019)
- ❑ Tárkányi, et al., *Recommended nuclear data for medical radioisotope production: diagnostic gamma emitters*  
Journal of Radioanalytical and Nuclear Chemistry 319, 2(2019) 487-531
- ❑ Tárkányi, et al., *Recommended nuclear data for medical radioisotope production: diagnostic positron emitters*, Journal of Radioanalytical and Nuclear Chemistry 319, 2(2019) 533-666