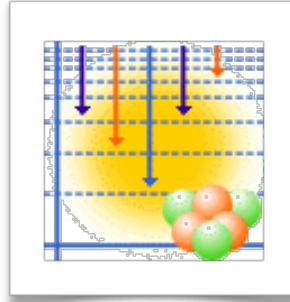




Member of the US Nuclear Data Program



Argonne Nuclear Data Program

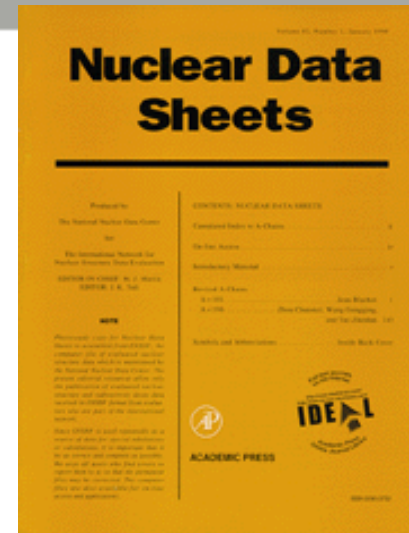
□ Nuclear Data **Compilations & Evaluations** - 90%

- ✓ nuclear structure compilations and evaluations - ENSDF & XUNDL
- ✓ evaluation of atomic masses and nuclear properties - AME & NuBase
- ✓ decay data evaluations in support of IAEA-CRP & other horizontal evaluations (nuclear isomers, medical isotopes, etc.)

□ Complementary ND **Research** Activities - 10%

- ✓ intersections between basic and applied nuclear physics & astrophysics - via collaborative agreements with a little or no cost to USNDP

ENSDF evaluations



- ❑ 22 mass chains permanently assigned to ANL (NSDD-IAEA)
- ❑ contributions to XUNDL compilation effort

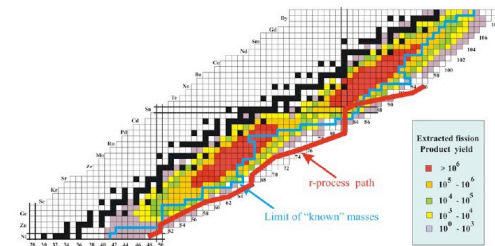
A	NDS	Evaluator
106	NDS 109 (2008)	D. DeFrenne & A. Negret
107	NDS 109 (2008)	J. Blachot
108	updated in 2008	J. Blachot
109	NDS 107 (2006)	S. Kumar, J. Chen & F.G. Kondev
110	NDS 113 (2012)	G. Gurdal & F.G. Kondev
111	NDS 110 (2009)	J. Blachot
112	NDS 124 (2015)	S. Lalkovski & F.G. Kondev
176	NDS 107 (2006)	M.S. Basunia
177	NDS 98 (2003)	F.G. Kondev
178	NDS 110 (2009)	E. Browne
179	NDS 110 (2009)	C.M. Baglin
199	NDS 108 (2007)	B. Singh
200	NDS 108 (2007)	F.G. Kondev & S. Lalkovski
201	NDS 108 (2007)	F.G. Kondev
202	NDS 109 (2008)	S. Zhu & F.G. Kondev
203	NDS 105 (2005)	F.G. Kondev
204	NDS 111 (2010)	C.J. Chiara & F.G. Kondev
205	NDS 101 (2004)	F.G. Kondev
206	NDS 109 (2008)	F.G. Kondev
207	NDS 112 (2011)	F.G. Kondev & S. Lalkovski
208	NDS 108 (2007)	M. Martin
209	NDS 126 (2015)	J. Chen & F.G. Kondev

- ❑ outside the ANL region
 - ✓ A=133 with the St. Petersburg group
 - ✓ A=188 (with S. Juutinen, U. Jyvaskyla and D. Hartley, USNA) - post review
 - ✓ A=87, 227 (ICTP-IAEA, Trieste workshops)
- ❑ training & mentoring
 - ✓ very good post-docs - C. Chiara (US Army Lab.), S. Zhu (ANL-PHY) & J. Chen (MSU)
 - ✓ NSDD collaborators - S. Lalkovski (U. Sofia) and S. Kumar (U. Delhi) - India-US fellowship stationed at ANL for 9 months
 - ✓ new, positive development (following the last NSDD meeting) - Yuichi Ichikawa (RIKEN); opportunities in China (FRIB-China)

ENSDF evaluations - cont.

A	NDS	Evaluator
106	NDS 109 (2008)	D. DeFrenne & A. Negret
107	NDS 109 (2008)	J. Blachot
108	updated in 2008	J. Blachot
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CARIBU @ANL



Atomic Data and Nuclear Data Tables 103–104 (2015) 50–105

Configurations and hindered decays of K isomers in deformed nuclei with $A > 100$

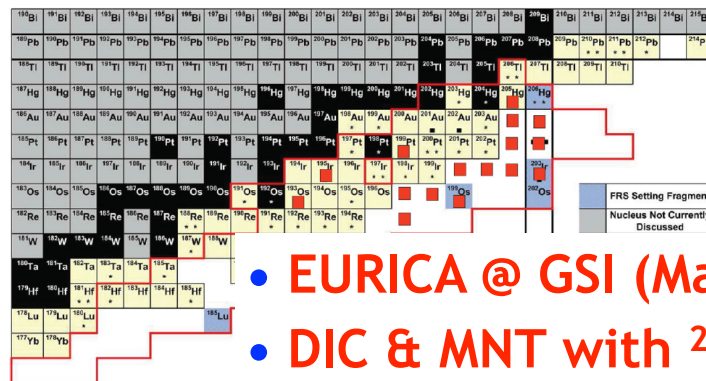
F.G. Kondev^{a,*}, G.D. Dracoulis^{b,1}, T. Kibédi^b

IOP Publishing

Reports on Progress in Physics

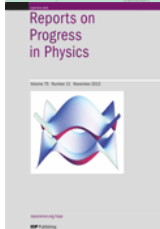
Review of metastable states in heavy nuclei

G D Dracoulis^{1,4}, P M Walker² and F G Kondev³



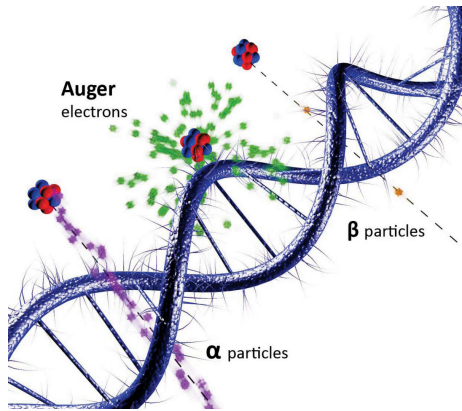
- EURICA @ GSI (March 2006)
- DIC & MNT with ^{208}Pb beams or targets & Gammasphere
- KISS project @ RIKEN
- N=126 factory @ ATLAS

aligned well with the ANL research effort



IAEA-CRPs & Medical Isotopes ND needs

- ❑ IAEA-CRP on “Nuclear data for charged-particle monitor reactions and medical isotope production” - led by R. Capote (IAEA-NDS)
 - ✓ decay data evaluations of ^{44}Ti , ^{66}Ga & ^{67}Cu
 - ✓ measurements: ^{66}Ga and ^{67}Cu - solving issues in existing nuclear data



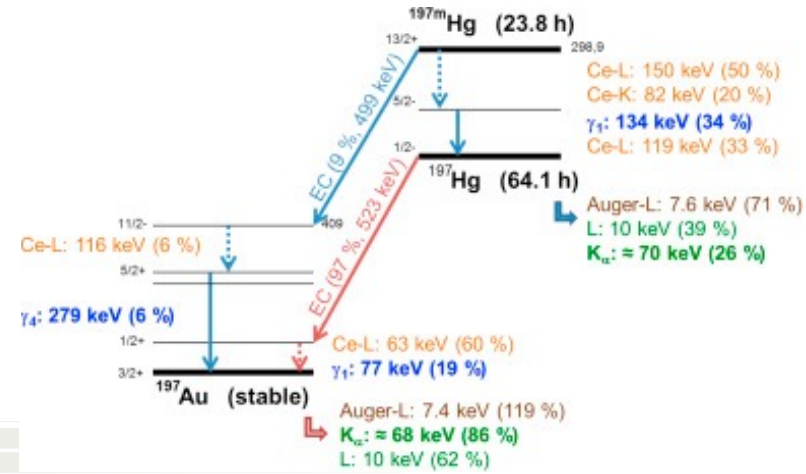
- ❑ Continue collaborations with ANU on improving atomic and decay data for Auger Emitters

PHYSICAL REVIEW C 92, 044330 (2015)

Precise absolute γ -ray and β^- -decay branching intensities in the decay of ^{67}Cu

J. Chen,^{1,*} F. G. Kondev,^{1,†} I. Ahmad,² M. P. Carpenter,² J. P. Greene,² R. V. F. Janssens,² S. Zhu,² D. Ehst,¹ V. Makarashvili,¹ D. Rotsch,¹ and N. A. Smith¹

- ❑ issues with $^{197\text{m}}\text{Hg}$ decay data
 - ✓ theranostic nuclide - imaging & Auger
 - ✓ collaboration with O. Lebeda (Academy of Science, Czech Republic) - both new measurements & evaluation



Nuclear Data Research Activities

relatively small effort (0.1 FTE) - complements and benefits the evaluation activities - sought after collaborator with little or no cost to USNDP

- ❑ at **ANL** - nuclei far from stability, spectroscopy of heavy and super-heavy nuclei, K-isomers, beta-delayed spectroscopy & mass measurements; **decay spectroscopy** of actinide nuclei and nuclei of importance to applications of medical isotopes and metrology
 - ✓ **CARIBU** - properties of neutron-rich nuclei (nuclear structure & masses, astrophysics & applications - beta-delayed gamma's and neutrons, independent fission yields & isomeric ratios in fission)
- ❑ at **MSU** (Coulex & decay spectroscopy), **TRIUMF** (decay spectroscopy) & **RIKEN** (decay spectroscopy) - properties of neutron-rich nuclei far from the line of stability
- ❑ at **Australian National University & RCNP-Osaka** (isomers, astrophysics & medical isotopes physics), at **Jyvaskyla University** (spectroscopy of SHE)

