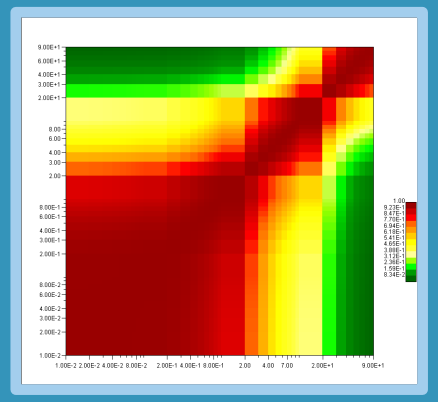
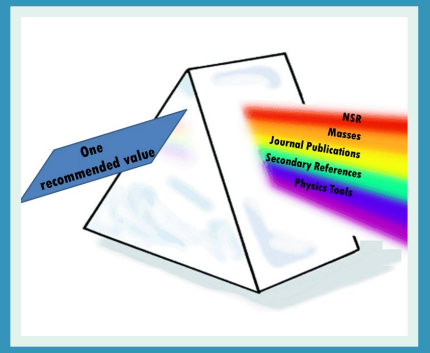
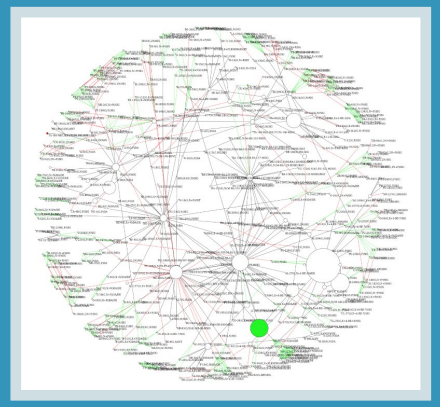
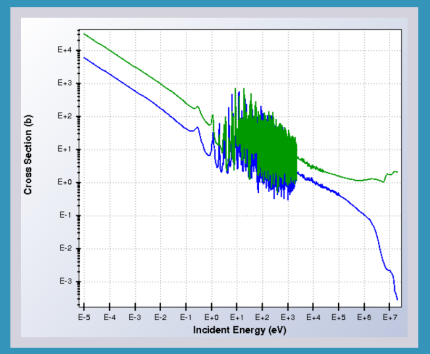
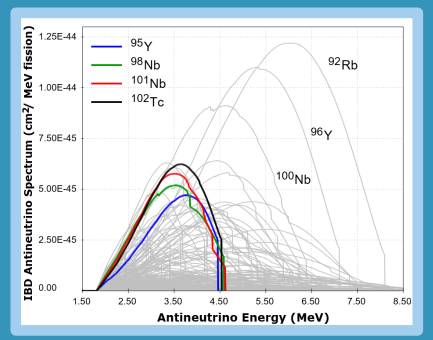
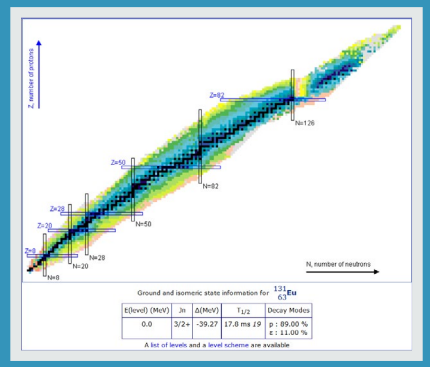












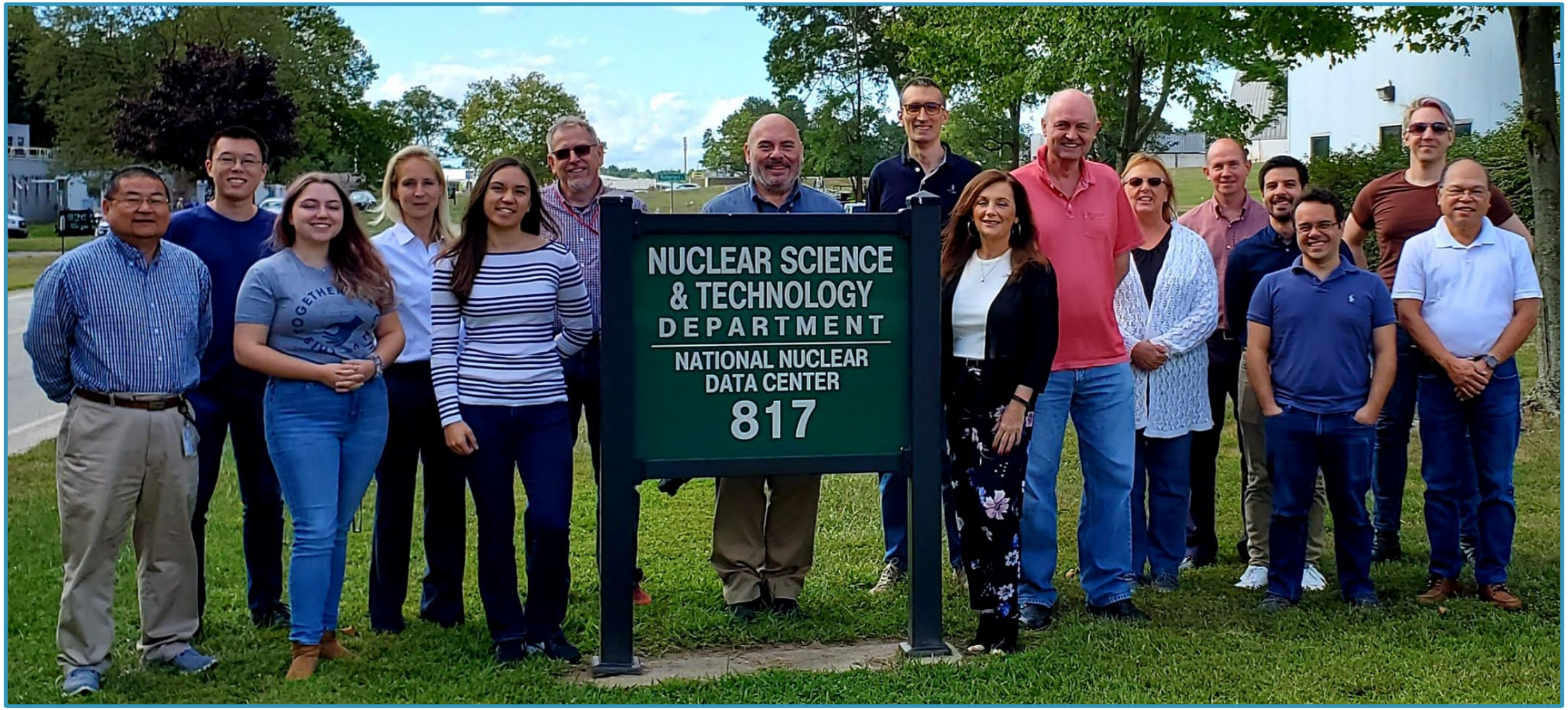
National Nuclear Data Center Report

NRDC Meeting

May 4th, 2021

Alejandro Sonzogni,
NNDC - BNL

Last group picture, including 6 people who joined in 2019 (plus two students).



Since then

Name	Before	Starting Date	Position in LBNL	
Christopher Morse	LBNL post-doc	March 1, 2021	BNL Assistant Scientist - ENSDF modernization project funded through LAB-19-2114 call.	
Amber Lauer	TUNL post-doc	May 17, 2021	BNL Post-doc ENDF evaluations	

National Nuclear Data Center

Organizational Chart by activity - 18 employees + 6 contracts

NSR
Boris Pritychenko
Emil Betak[c]
Balraj Singh[c]
Joann Totans

EXFOR
Boris Pritychenko
Andrea Mattera
Stanislav Hlavac[c]
Olena Gritzay[c]
Otto Schwerer[c]

XUNDL
Libby McCutchan
Balraj Singh[c]

ENSDF
Libby McCutchan
Adam Hayes
Andrea Mattera
Chris Morse
Balraj Singh[c]
Alejandro Sonzogni
Shaofei Zhu

ENDF
David Brown
Ramon Arcilla
Allan Carlson[c]
Arantxa Cuadra-Gascon
Amber Lauer
Ryan Lorek
Andrea Mattera
Gustavo Nobre
Alejandro Sonzogni
Matteo Vorabbi

Web dissemination
Benjamin Shu
Ramon Arcilla
Adam Hayes
Boris Pritychenko
Alejandro Sonzogni

Nuclear Data Sheets
Libby McCutchan
Jeannie Frejka
Boris Pritychenko

Nuclear Astrophysics
Boris Pritychenko

Nuclear Structure Experiments
Adam Hayes
Ryan Lorek
Andrea Mattera
Libby McCutchan
Chris Morse
Shaofei Zhu

Database/Project manager is underlined when applicable.
C: contractor

New ^{238}U fission yields data (A. Mattera, A.A. Sonzogni)

Data following the electromagnetic induced fission of ^{238}U and ^{239}U was published in 2017 and 2019

SOFIA @ GSI (2017)

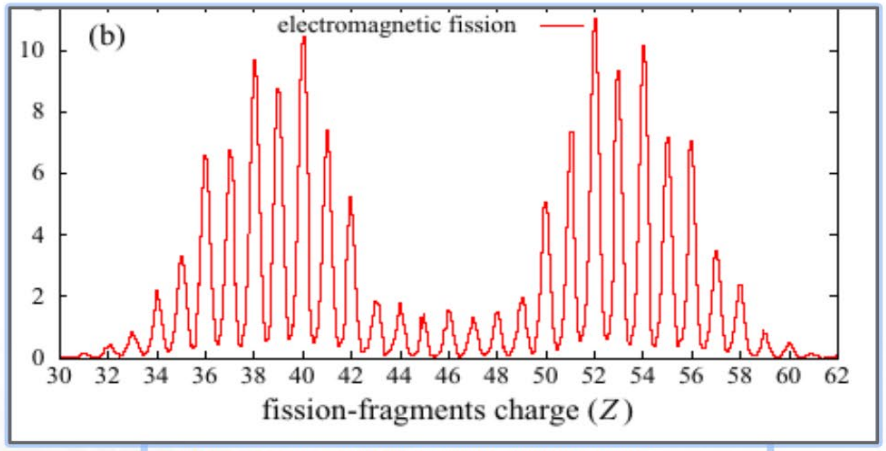
^{238}U*

^{238}U* at E_{EX} = 14.7 MeV

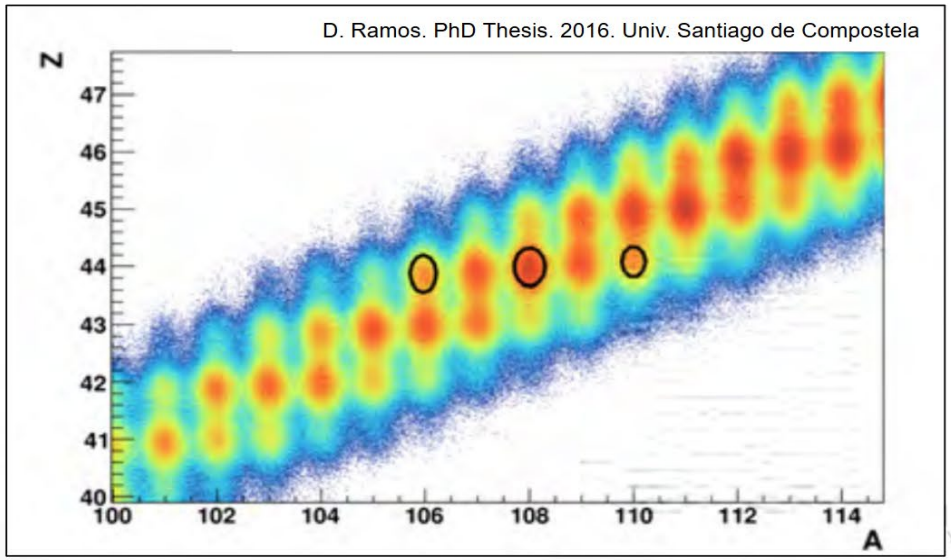
VAMOS @ GANIL (2019)

^{239}U*

^{239}U* at E_{EX} = 8.5 MeV



E Pellereau *et al.* PHYS REV C 95, 054603 (2017)



NNDC

GANIL Data

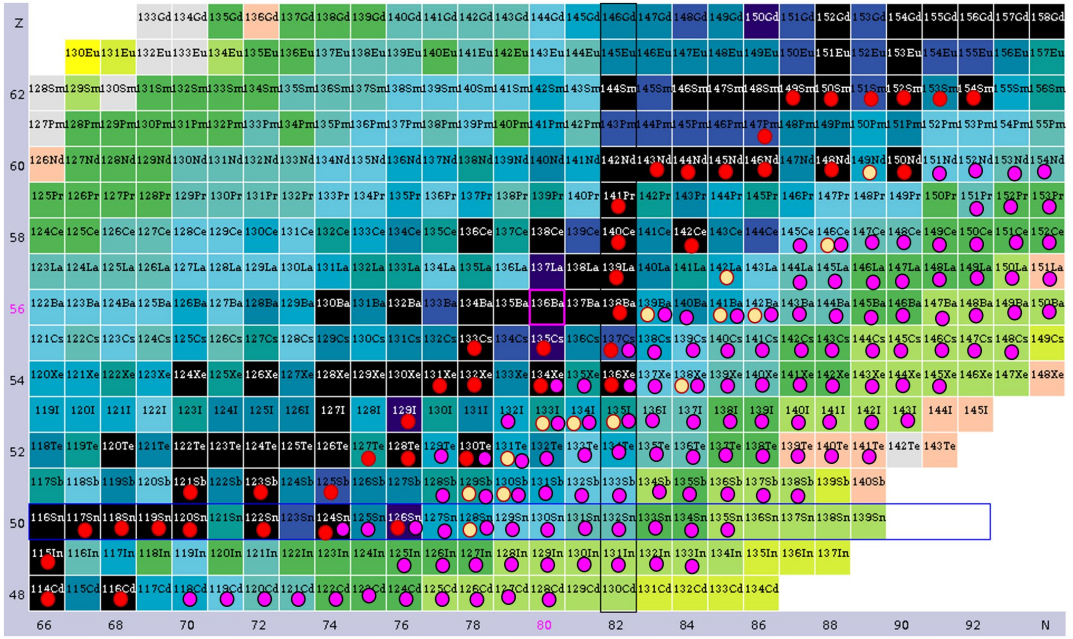
2019RA23
X4 datasetO2464

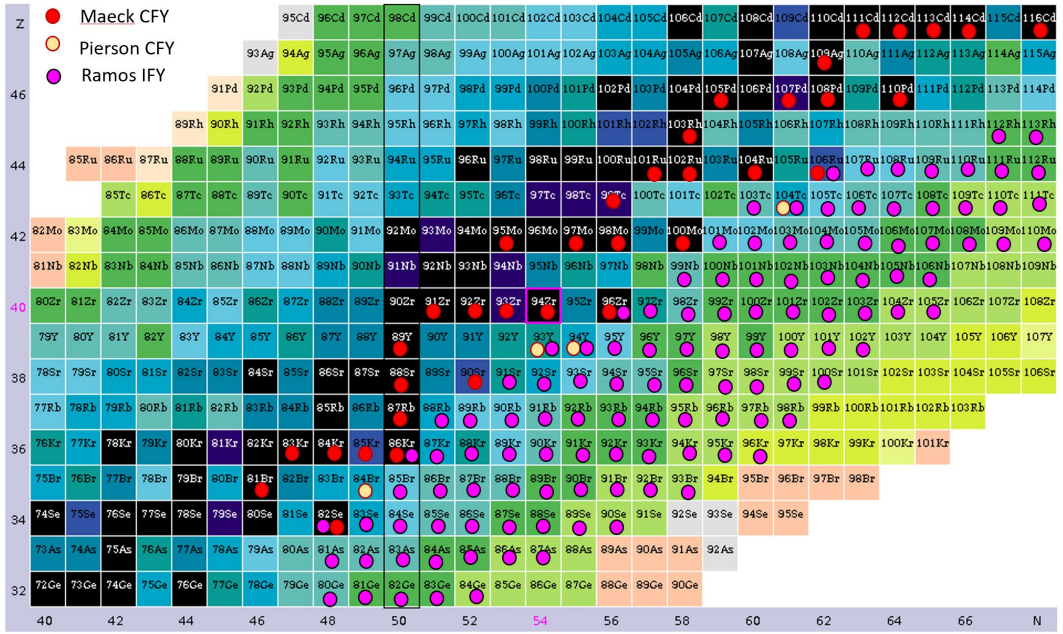
These types of experiments can provide independent yield data for hundreds of fission products, including very neutron rich nuclides.

From this data one can obtain properties of the Z distribution, P(Z|A), that are unknown for ^{238}U and described using phenomenological models for ^{235}U and ^{239}Pu.

The best fission yield evaluation can be constructed with:

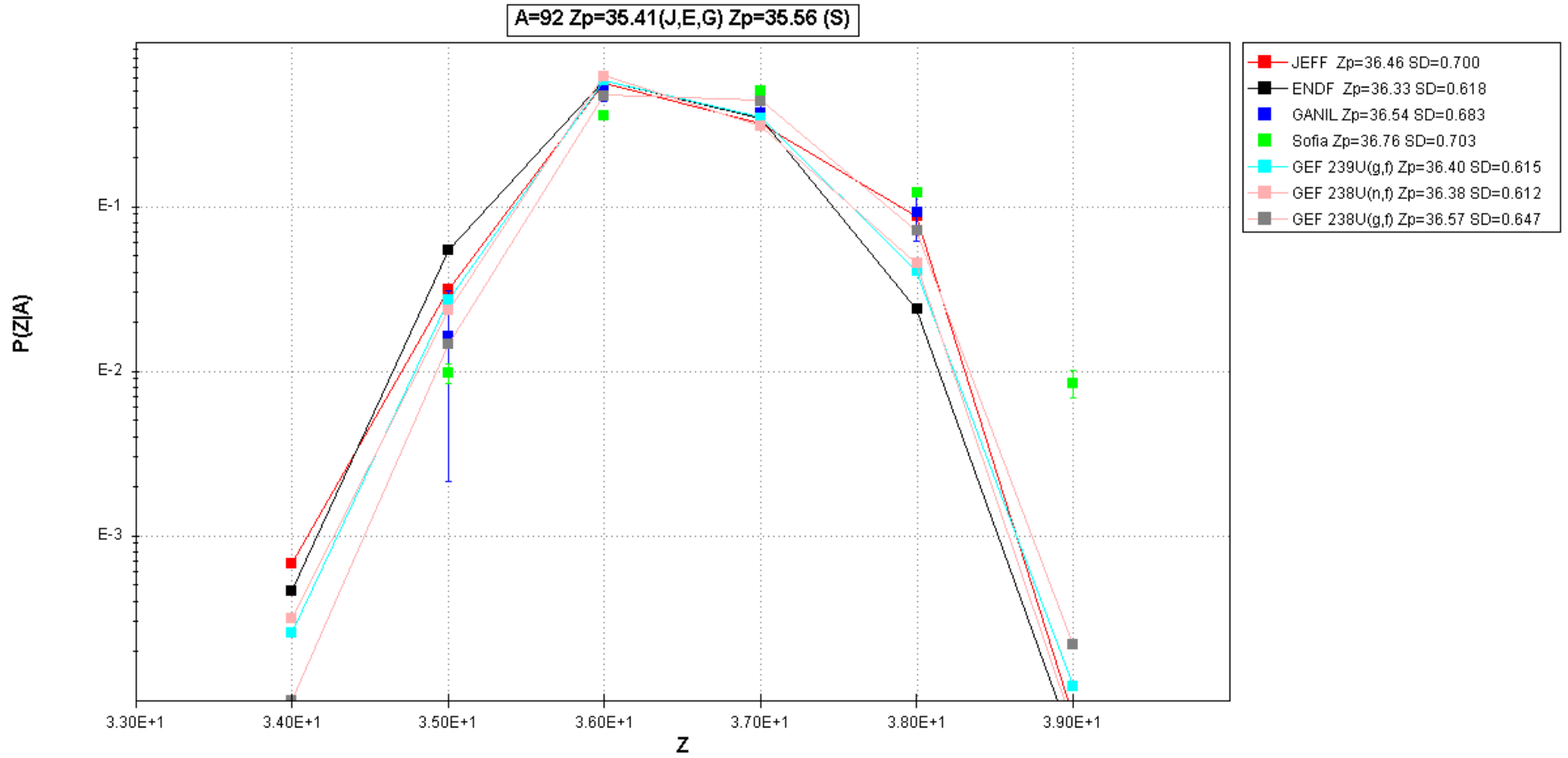
- ❑ **Maeck-like data.**
- ❑ **GANIL-like Z-distribution.**
- ❑ **Isomeric ratios.**
- ❑ **Decay data.**





Z distribution properties

The P(Z|A) distribution can be described with a Gaussian function, with a centroid <Z> and a given standard deviation.

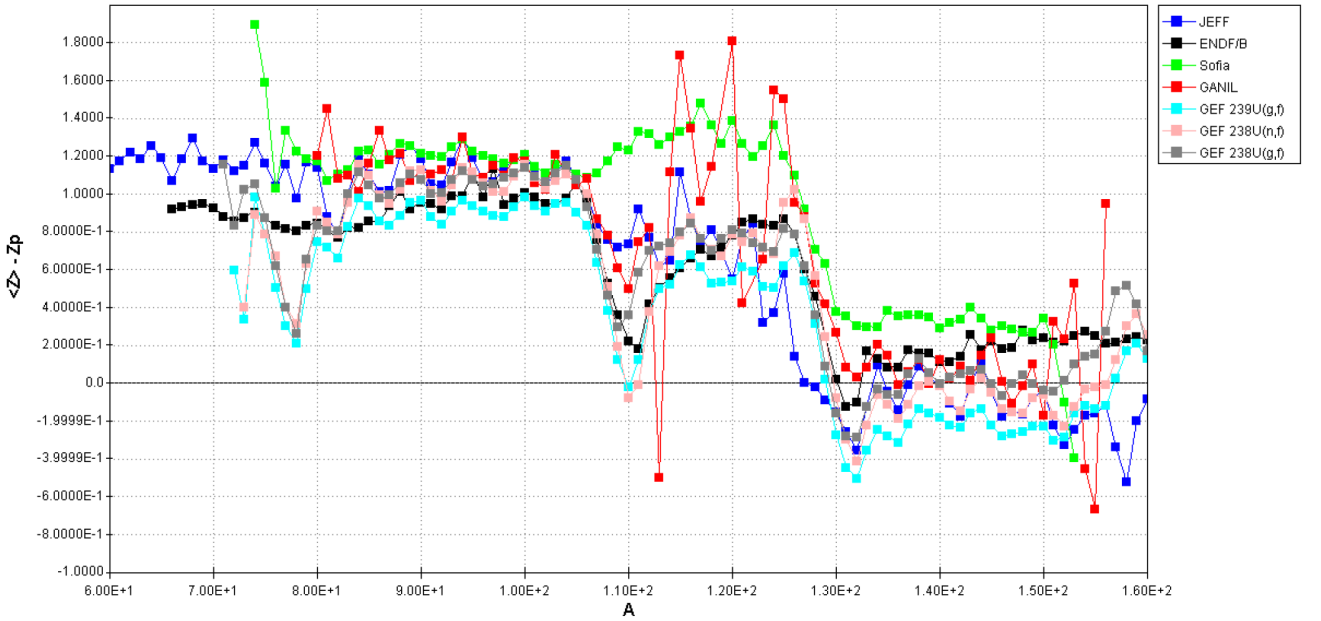


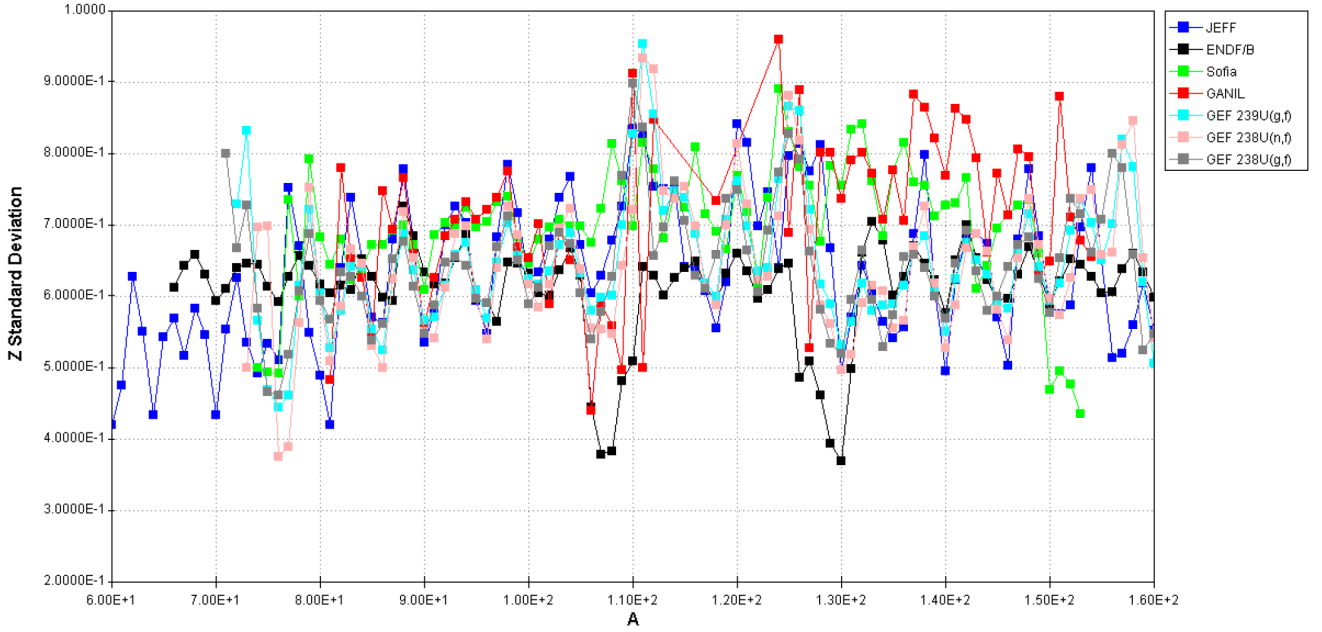
Z distribution properties

It has been known that <Z> deviates from the most probably charge Zp=Zcn x A/(Acn – <n>) for the light fission products.

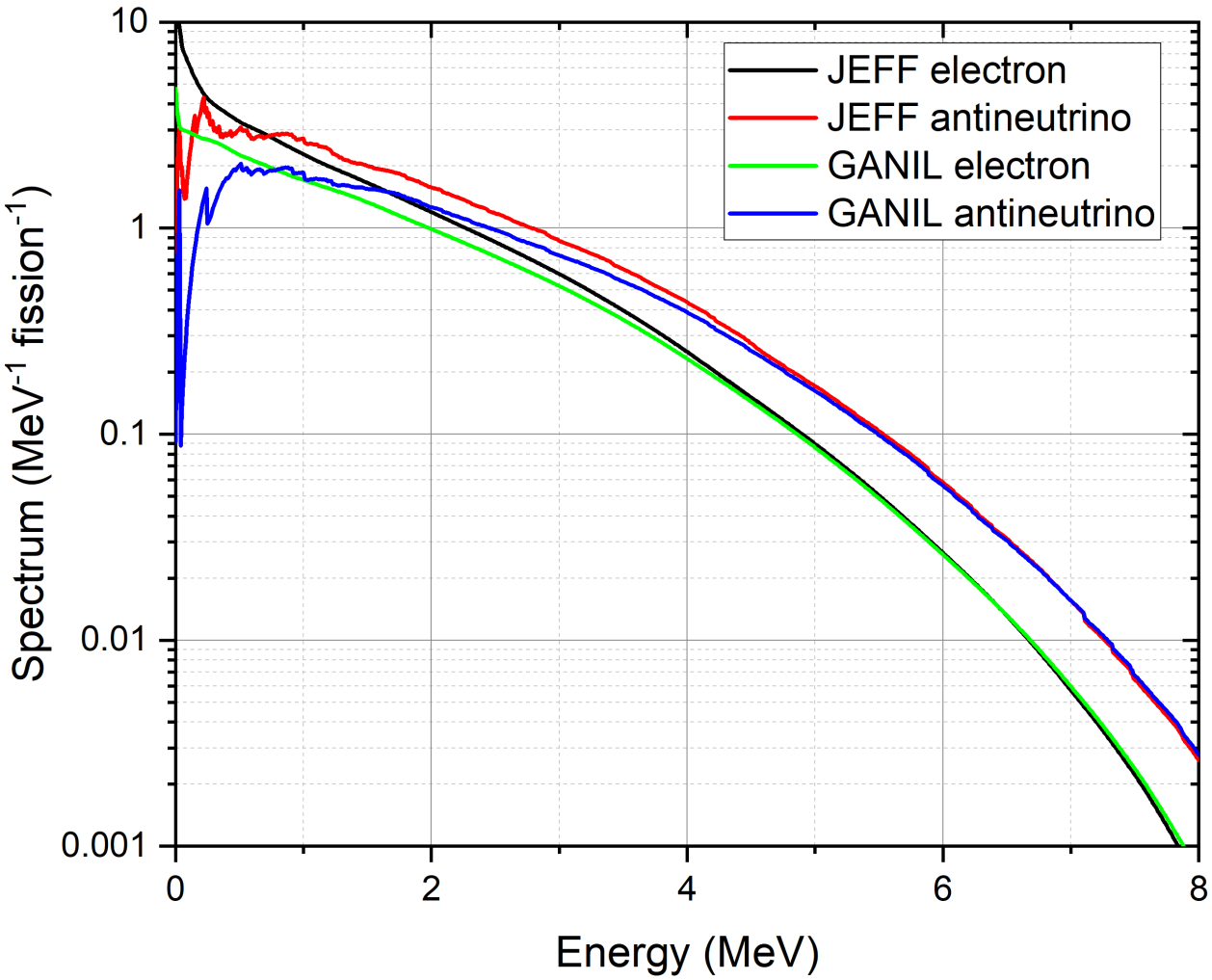
The plots to the right compare the GSI and GANIL data with the ENDF/B, JEFF and GEF modeling.

Both GSI and GANIL data follow the trends of neutron-induced fission yield data.



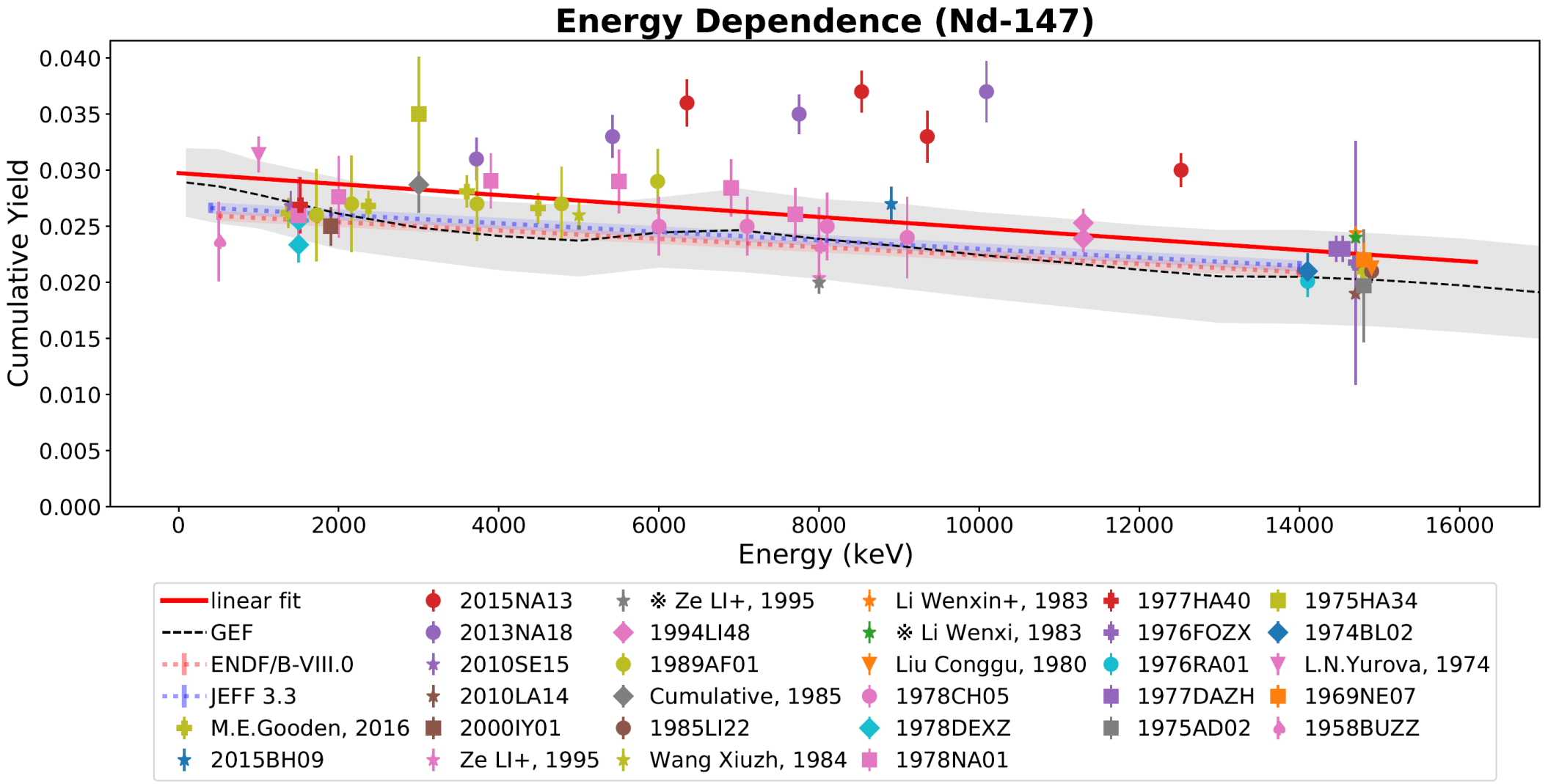


Electron and antineutrino spectrum following fission



Quite a decent agreement between JEFF and GANIL, in particular no excess of antineutrinos at 5 MeV.
An article describing this work will be submitted shortly.

Energy dependence of ^{238}U fission yields (A. Mattera, A.A. Sonzogni)



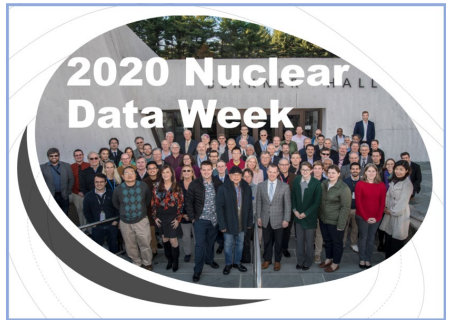
Including GEF-based uncertainty band!

Can be used for outlier identification

Upcoming Nuclear Data Meetings

ENSDF: Evaluated Nuclear Structure Data File

ENSDF workshop held in conjunction with Low Energy Community Meeting
August 2021
Obtain feedback on ENSDF modernization effort



Nuclear Data Week
November 15-19, 2021

International Conference on Nuclear Data for Science and Technology
Late Summer 2022
Sacramento, CA. Organized by LLNL.