ENDF/B-VII.0
Decay Data Library

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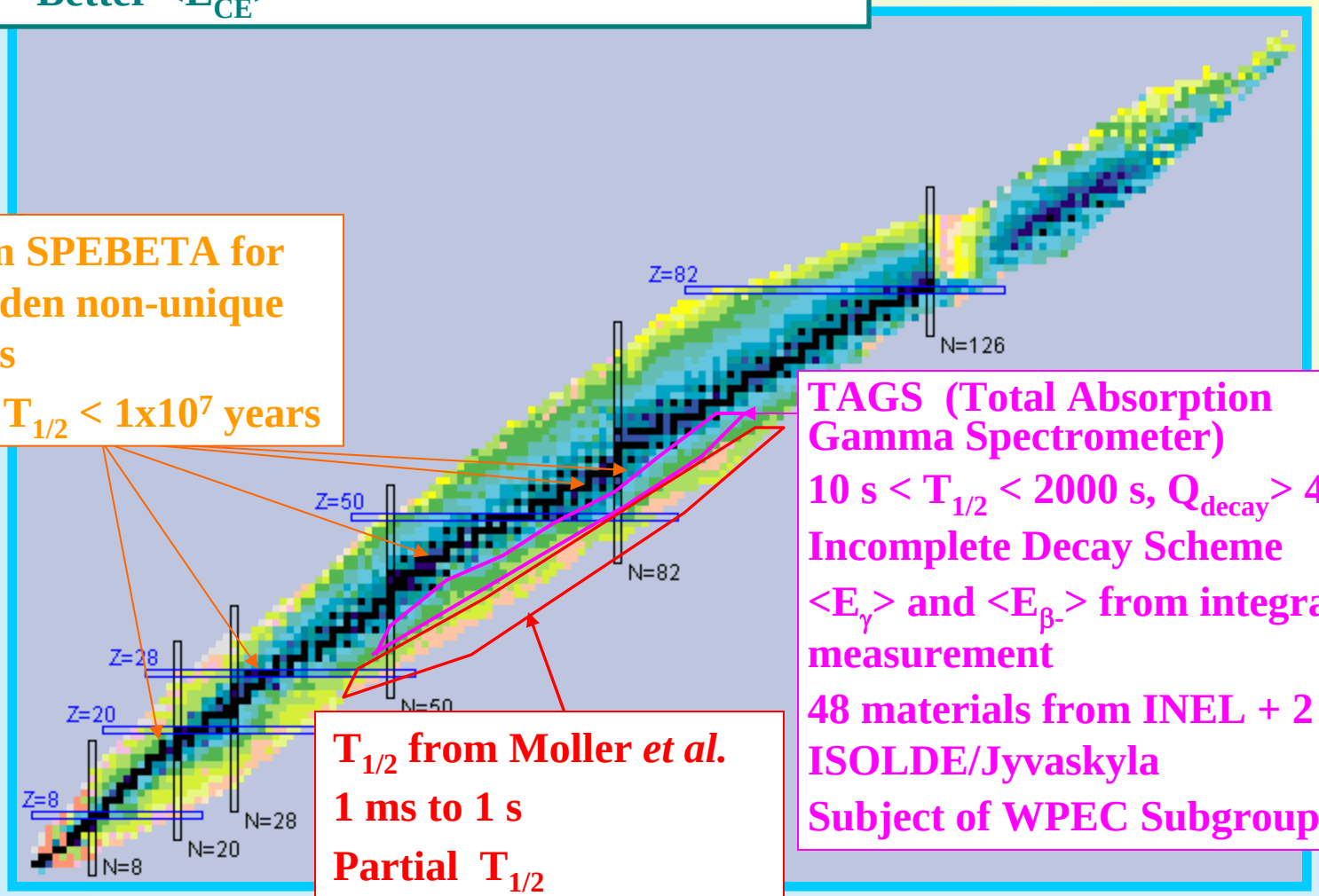
- New ENDF/B-VII.0 decay data library
- Main sources:
  - Evaluated Nuclear Structure Data File (ENSDF), continuosly updated
  - 2005 Nuclear Wallet Cards by J. Tuli (NNDC)
- Covers all nuclides from neutron (Z=0) to Rg (Z=111)
- 3830 materials
- Previous version done during 1988-1993 covering 979 materials

Use of new Internal Conversion Coefficients (BRICC)

→ **Better $<E_{CE}>$**



$<E_{\beta}>$ from SPEBETA for 2nd forbidden non-unique transitions

44 days < $T_{1/2}$ < 1x10^7 years

TAGS (Total Absorption Gamma Spectrometer)

10 s < $T_{1/2}$ < 2000 s, Q_{decay}> 4 MeV

Incomplete Decay Scheme

$<E_{\gamma}>$ and $<E_{\beta-}>$ from integral measurement

48 materials from INEL + 2 ISOLDE/Jyvaskyla

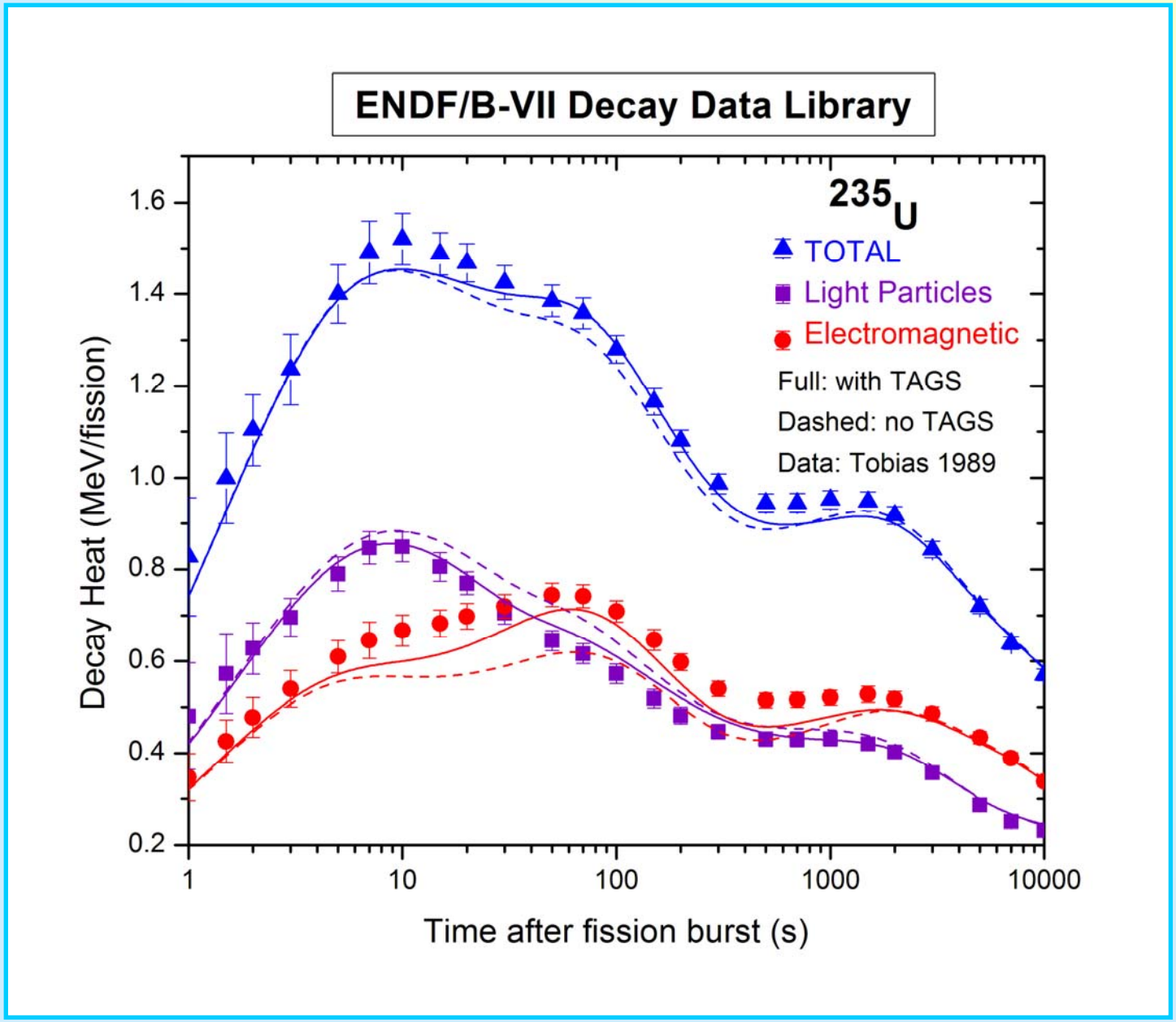
Subject of WPEC Subgroup 25

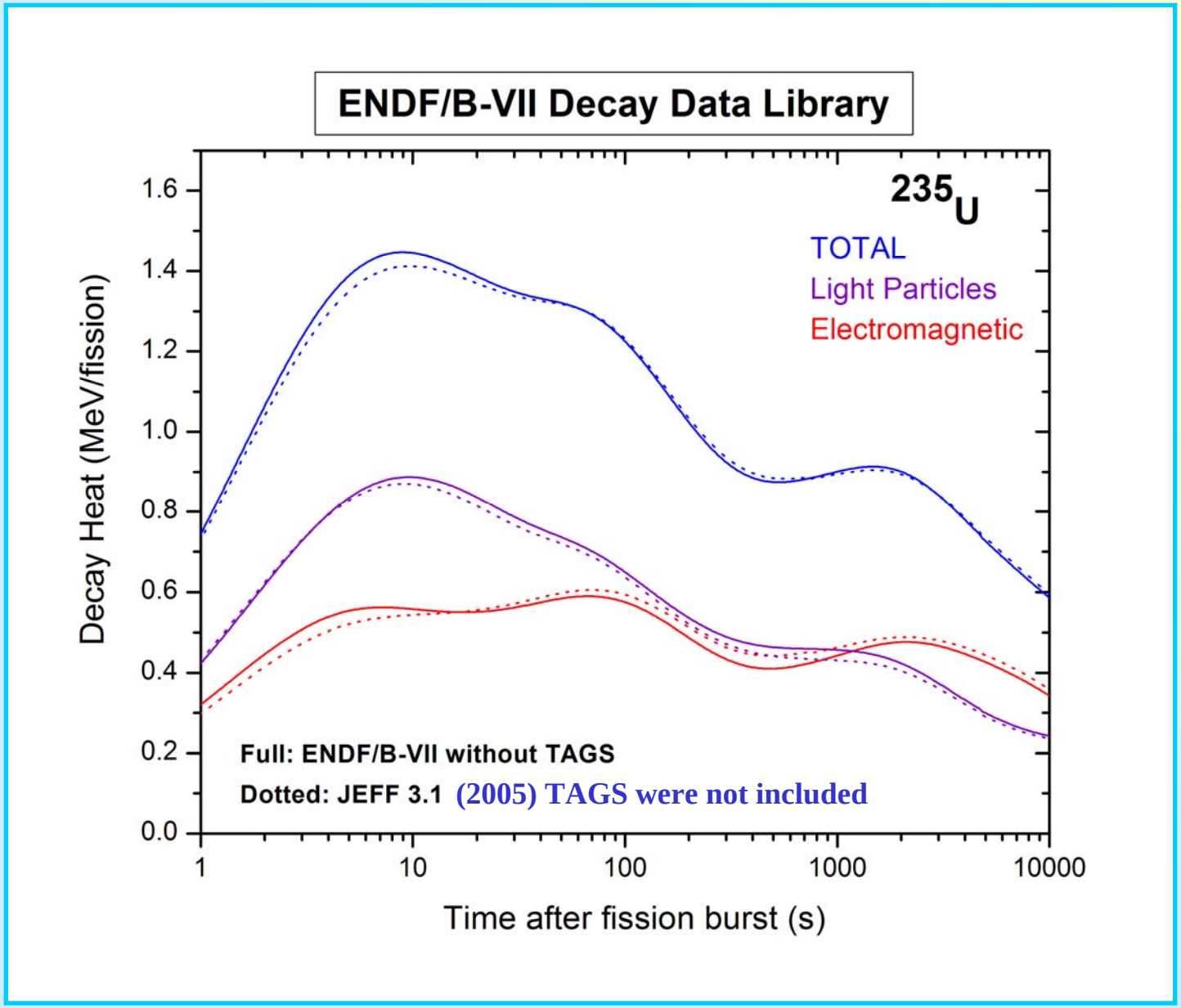
$T_{1/2}$ from Moller *et al.*

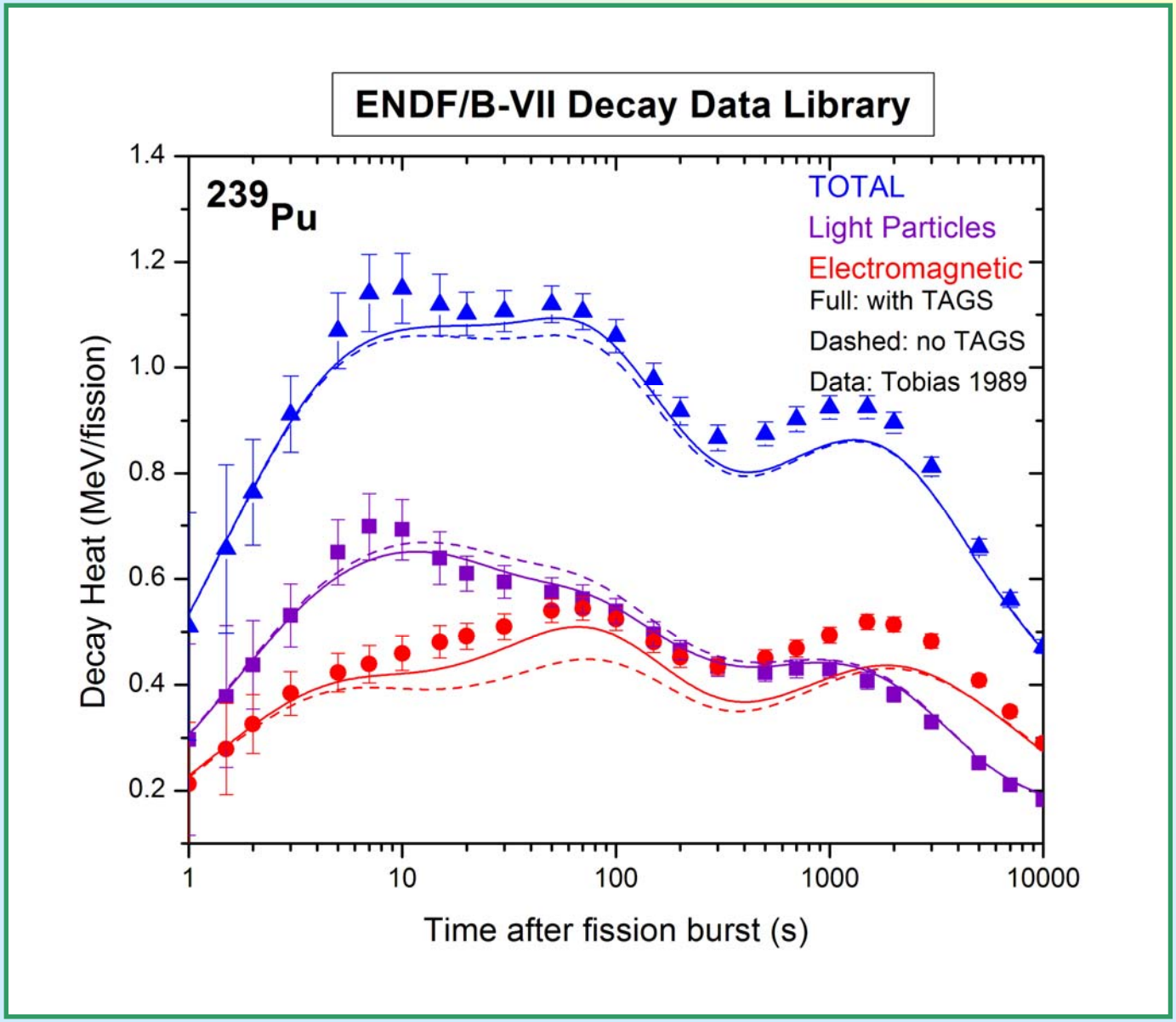
1 ms to 1 s

Partial $T_{1/2}$ information

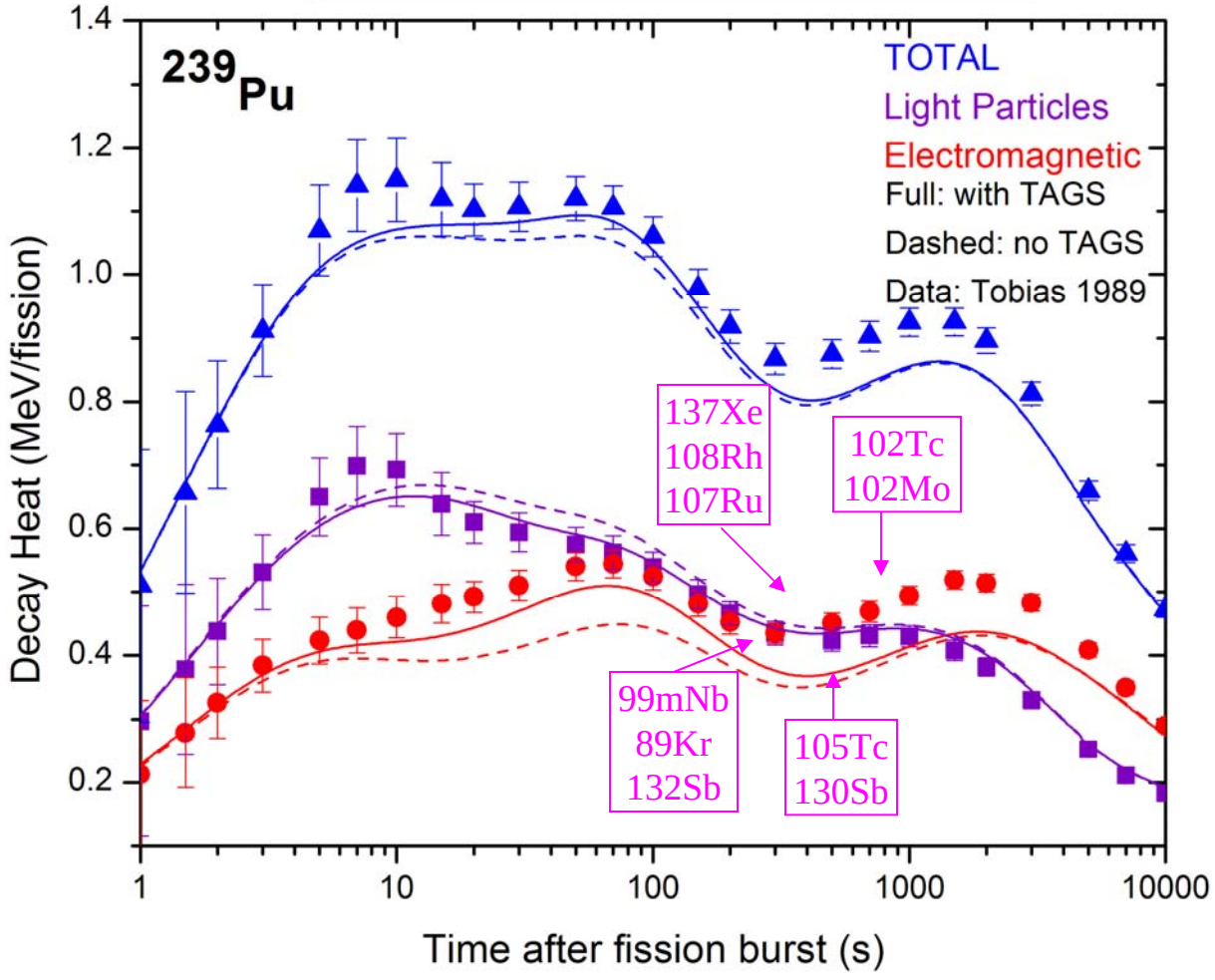
No Decay information other than Q-value


ENDF/B-VII Decay Data Library
235U
TOTAL
Light Particles
Electromagnetic
Full: with TAGS
Dashed: no TAGS
Data: Tobias 1989
Decay Heat (MeV/fission)
Time after fission burst (s)
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
1
10
100
1000
10000

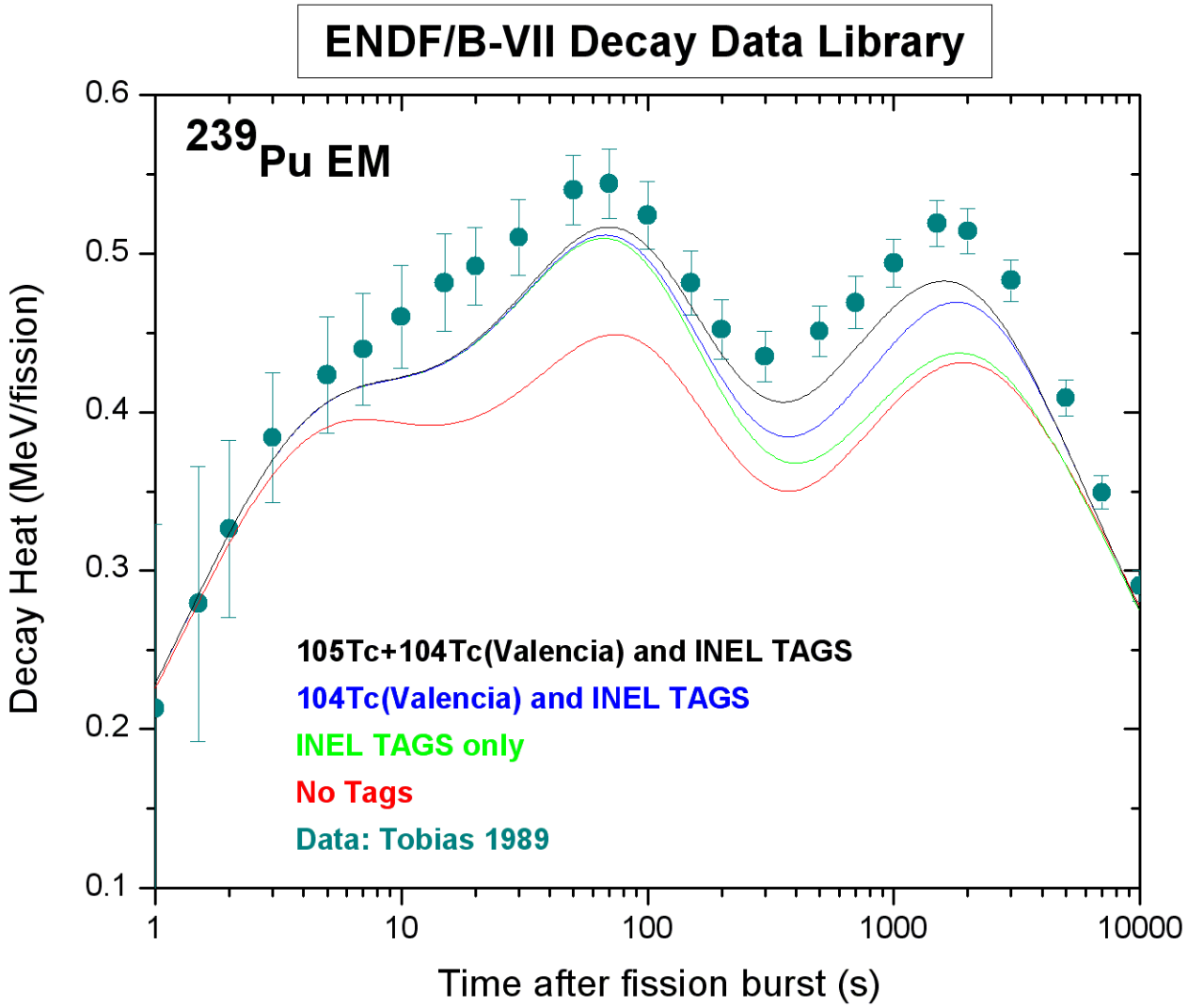

ENDF/B-VII Decay Data Library
235U
TOTAL
Light Particles
Electromagnetic
Decay Heat (MeV/fission)
Time after fission burst (s)
Full: ENDF/B-VII without TAGS
Dotted: JEFF 3.1 (2005) TAGS were not included


ENDF/B-VII Decay Data Library
239Pu
TOTAL
Light Particles
Electromagnetic
Full: with TAGS
Dashed: no TAGS
Data: Tobias 1989
Decay Heat (MeV/fission)
Time after fission burst (s)
1.4
1.2
1.0
0.8
0.6
0.4
0.2
1
10
100
1000
10000

Sensitivity Study



Effect of TAGS data



Summary

- ENDF/B-VII new decay data library part of beta 2 release
- Agreement with JEFF 3.1 without TAGS
- Some extra work to fix some errors arising from
  - Rounding off
  - ENSDF and NWC are not numerical, problems translating into numbers ex. % IT ?
  - Decay percentages for exotic nuclides, such as 4-Be-6
  - Problems in ENSDF/NWC