

Status of ENDF/B Decay Data

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BNL

Decay Data

ENDF/B decay data focus largely on nuclides produced in reactors.

Charles Reich at INEL, Tal England at LANL, and Junichi Katakura of JAERI while working with Tal for a year at LANL.

Reich improved or introduced evaluations for a large number of nuclides.

England and Katakura augmented data suffering the *Pandamonium Effect*, using continuous spectra from results of gross theory of beta decay (GT) calculations, as well as companion models of Yoshida et al. for gamma de-excitations.

Decay Data

These were used to provide β^- and γ spectra for a large number of fission-product nuclides .

Aggregate β^- and γ spectral benchmarking was improved greatly using ENDF/B-VI spectra.

A specific effort to improve β^- -delayed neutron emission and spectra is described in a subsequent presentation.

LA-UR-98-4208 (ENDF-359)

Title:

Beta ray spectra of fission product
nuclides in ENDF/B-VI file

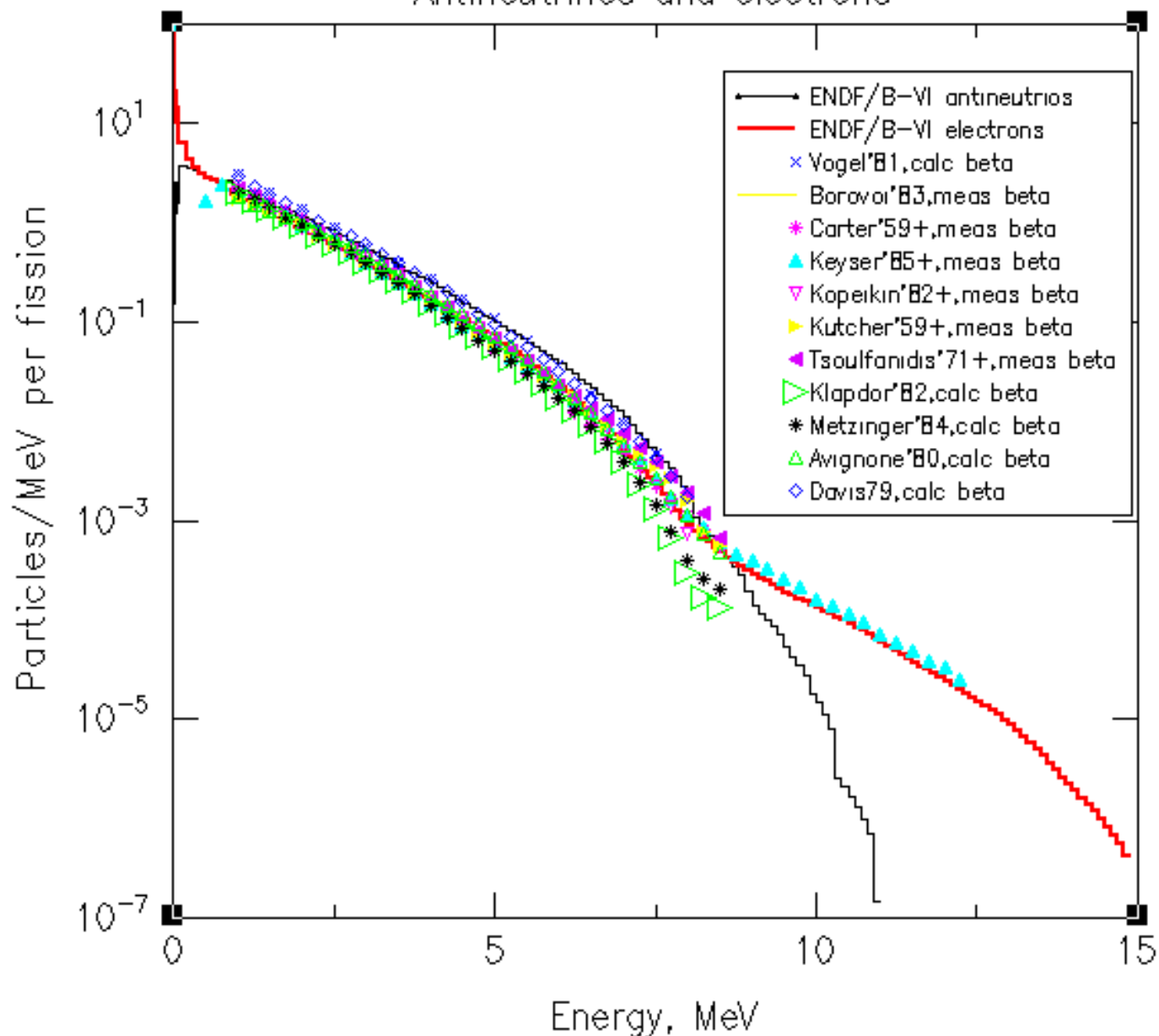
Author(s):

J. Katakura &
T. R. England

Comparisons of b- spectra with measured + modeled data

Spectra for U235t Equilibrium fission

Antineutrinos and electrons



LA-12125-MS
ENDF-352

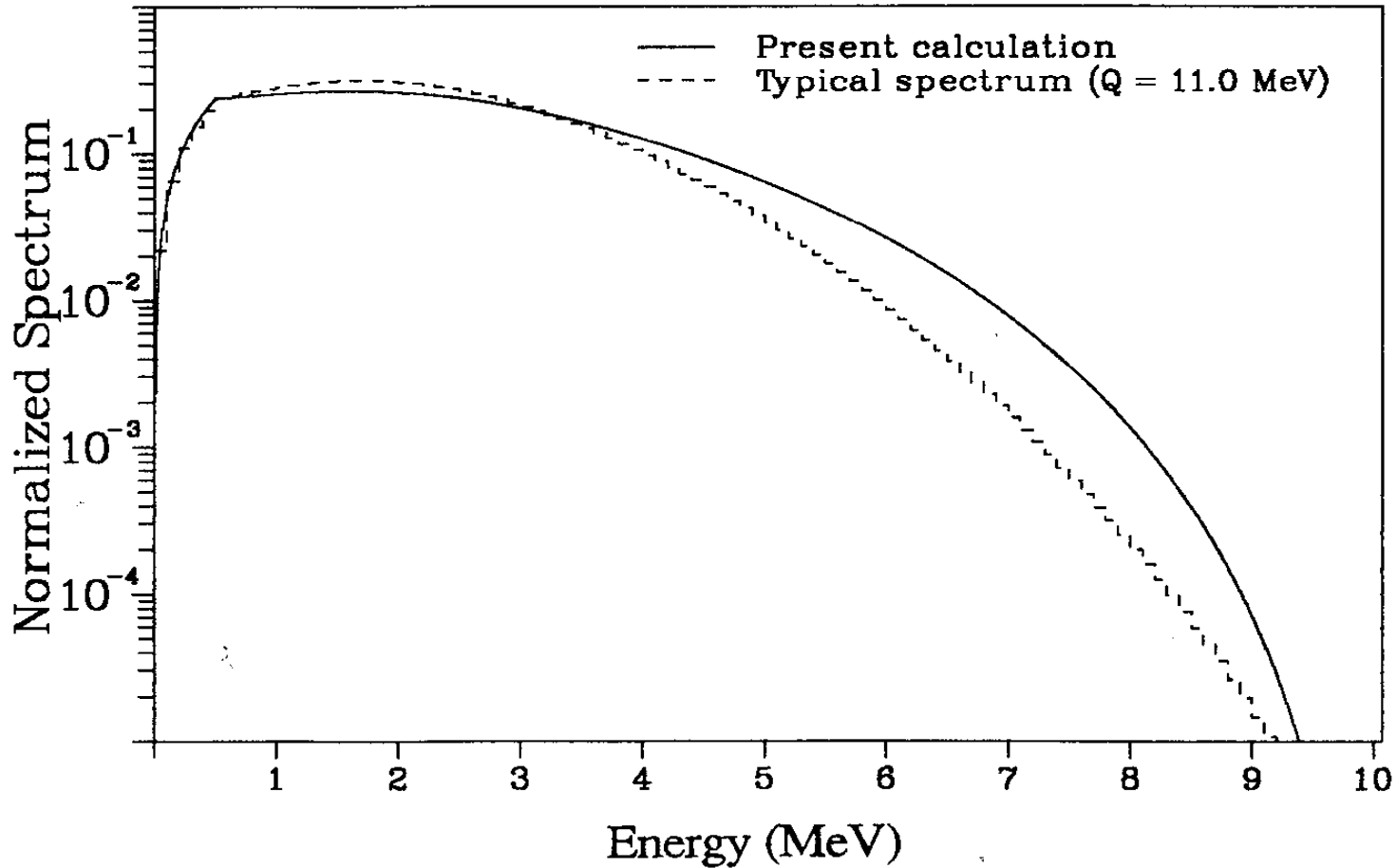
UC-413
Issued: November 1991

*Augmentation of ENDF/B Fission Product
Gamma-Ray Spectra by Calculated Spectra*

*J. Katakura**

T. R. England

Example of modeled γ spectrum



7). Fig. 8. Calculated energy spectrum of ^{78}Ni decay ($Q=10.1$ MeV).

Example of model-supplemented γ spectrum

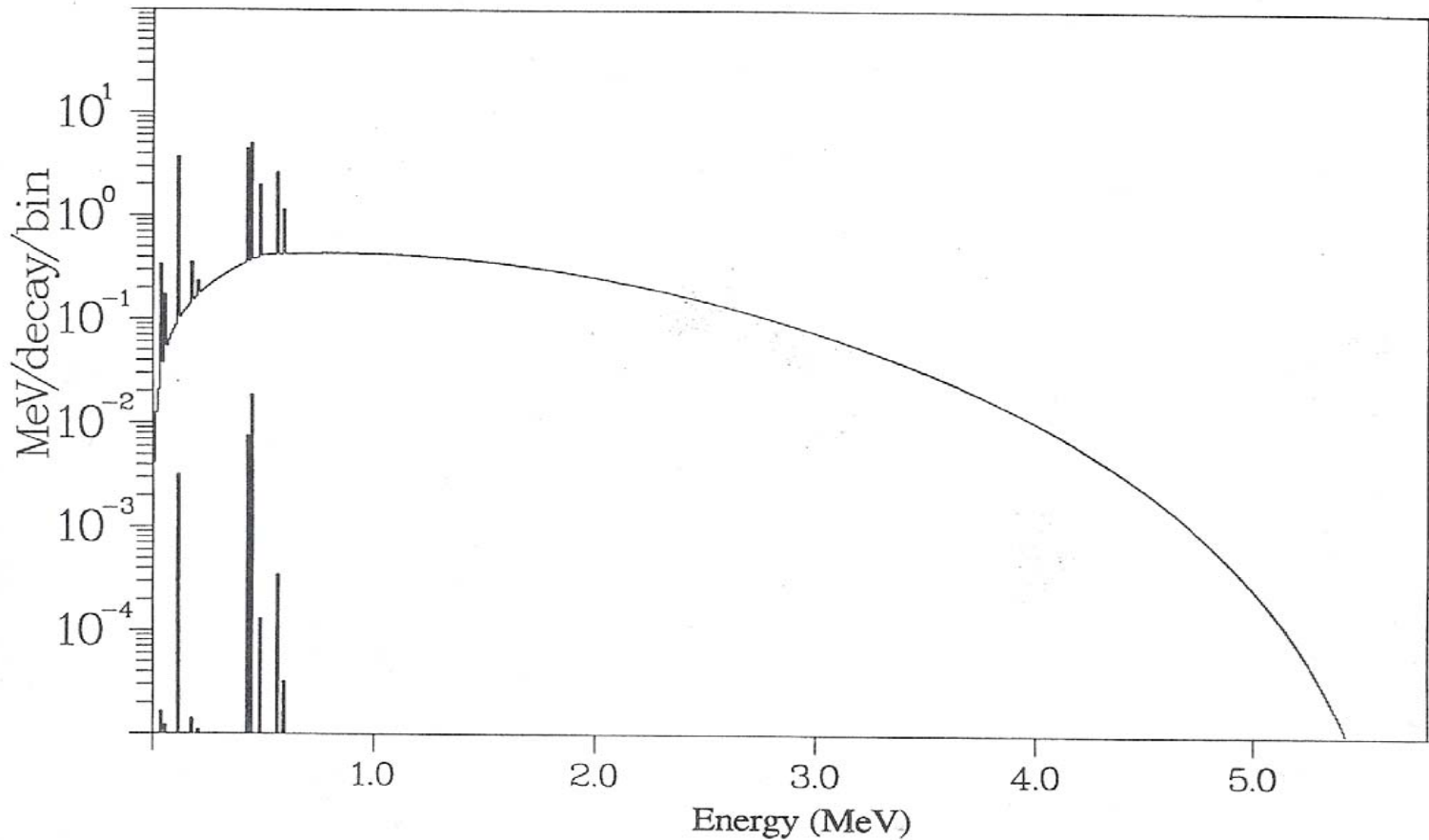


Fig. 13. Measured and modified energy spectra of ^{98}Sr decay ($Q_{00}=0.00$).

Aggregate γ Spectrum Comparison with Dickens Measurement <3 MeV

Fig. A-5. Gamma spectrum after ^{241}Pu thermal neutron fission ($T_{\text{irrad.}} = 1.0$ sec, $T_{\text{cool.}} = 2.2$ sec) (to 8 MeV).

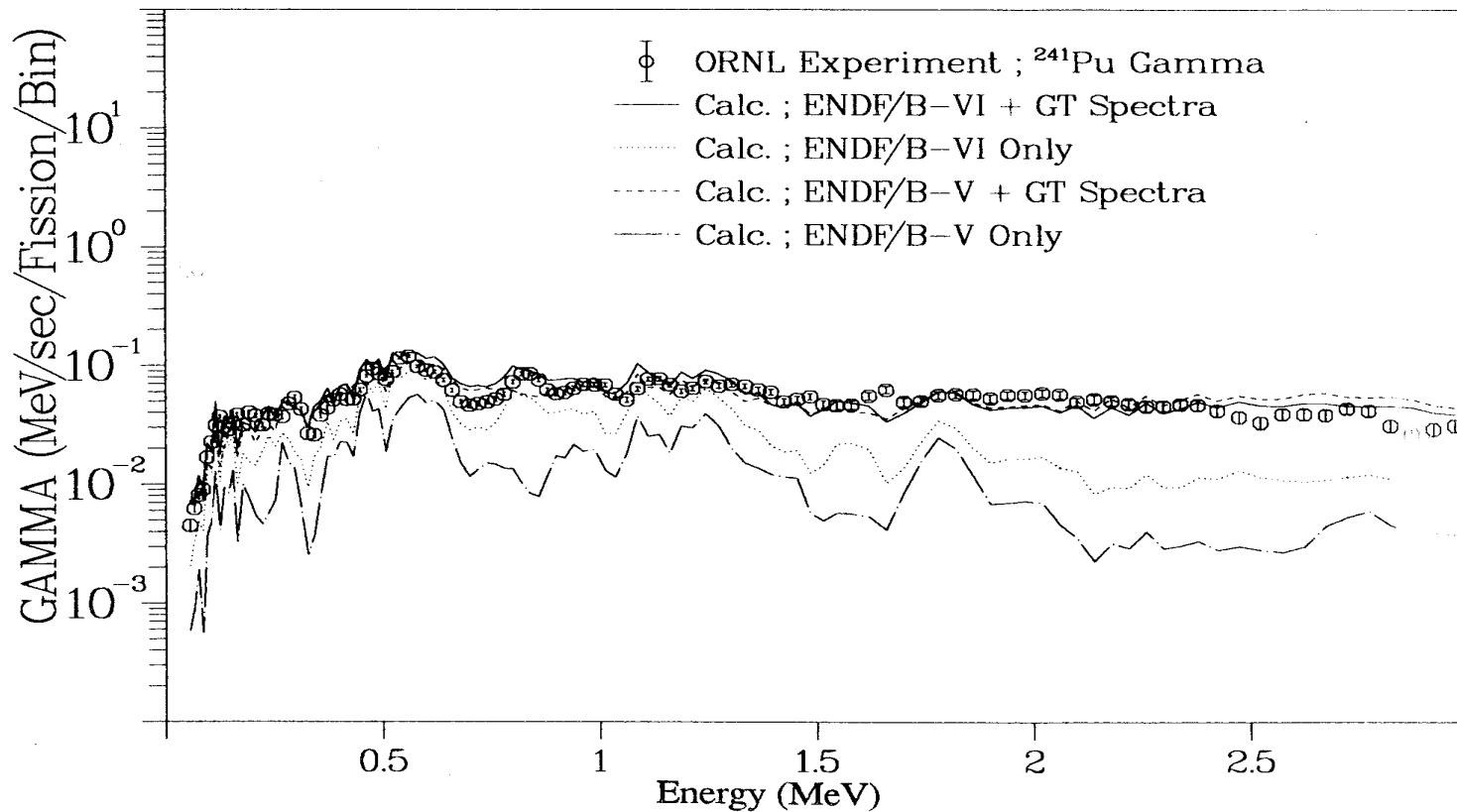


Fig. A-6. Gamma spectrum after ^{241}Pu thermal neutron fission ($T_{\text{irrad.}} = 1.0$ sec, $T_{\text{cool.}} = 2.2$ sec) (to 3 MeV).

Aggregate γ Spectrum Comparison with Dickens Measurement, $< 8\text{MeV}$

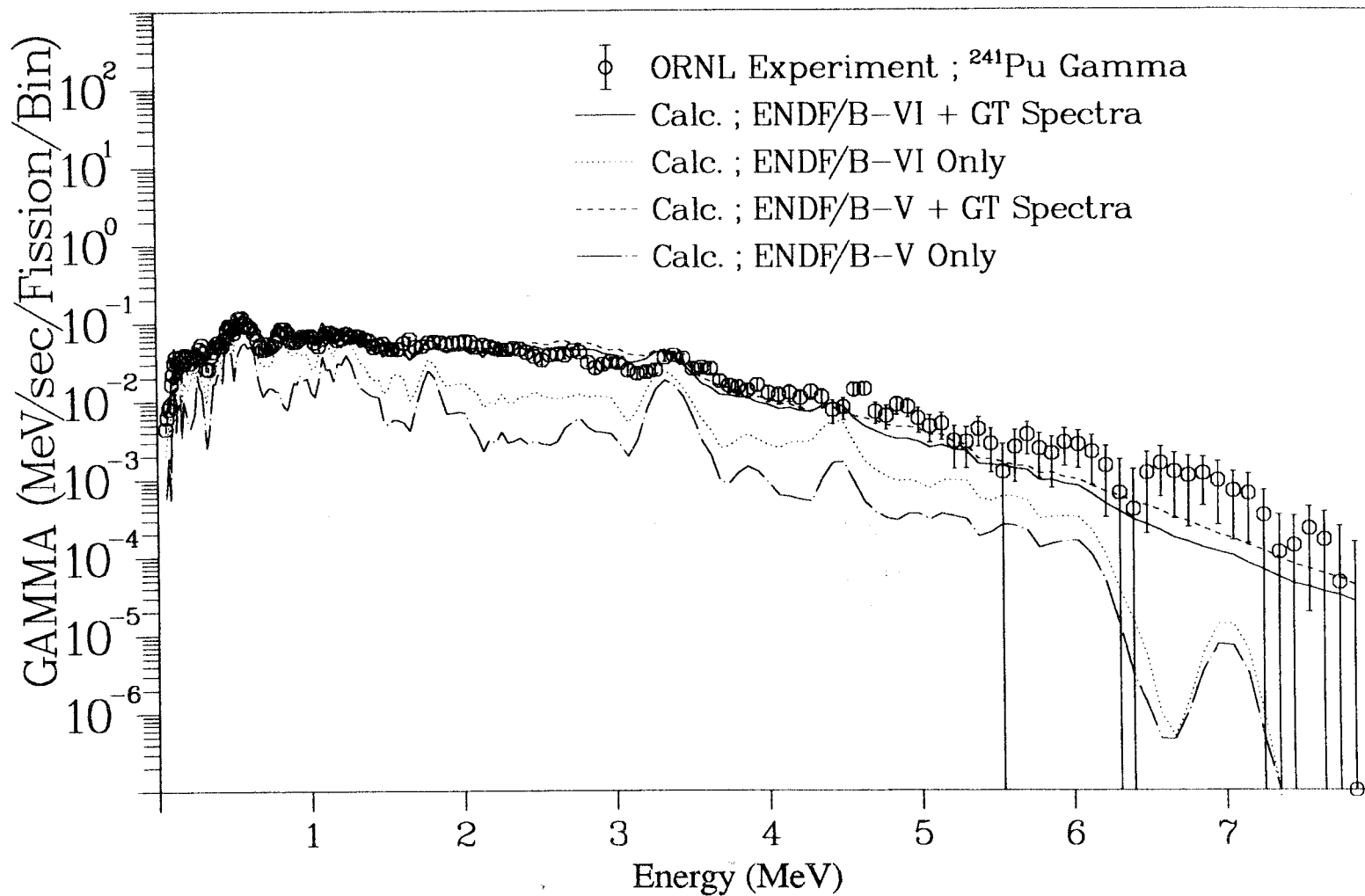


Fig. A-5. Gamma spectrum after ^{241}Pu thermal neutron fission ($T_{\text{irrad.}} = 1.0$ sec, $T_{\text{cool.}} = 2.2$ sec) (to 8 MeV).

ENDF/B-VII and Beyond

Encouraging decay evaluation work described at
APS-DNP meeting

- Alan Nichols, IAEA
- Tuli +, NNDC
- Smith +, ORNL

Data survey needed

Improve, complete the individual nuclide β^-
spectra with modeled E_0

- Gross Theory extensions
- Moller β^- data model H-L, branchings, spectra
- Evaluation of cascades