NJOY Status

R. E. MacFarlane
Los Alamos National Laboratory

NJOY Status

- There have been few changes to the standard NJOY99 over the last year.
- Work on the f90 version of NJOY has concentrated on…
- Testing
- MCNP thermal representation
- New resonance representation

NJOY Testing

- Processed all of ENDF/B-VI into PENDF, ACE, and multigroup formats.
- Did diff comparisons where possible.
- Used the new files to run a variety of benchmark calculations to see if the results matched the older f77 code.

MCNP Thermal Model

- Current MCNP libraries represent thermal scattering for bound moderators represented by ENDF S(α,β) using a set of discrete cosines and energies with preassigned probabilities.
- This method seems to work well for normal criticality problems, but it leads to annoying spikes in results tabulated in fine angle or energy groups.

MCNP Thermal (continued)

- We have experimented with several methods to provide smoother shapes for the emission spectra, including
- Smoothing the discrete peaks around their normal positions, and
- Using real linearly interpolated distributions represented as cummulative probability functions.

Resonance Representation

- We adapted coding from Nancy Larson's prototype code ***samrml*** to use in the f90 NJOY code.
- This coding can generate resonance cross sections from either ***rm*** or ***rml*** parameters, the associated angular distributions, and the associated derivatives for covariance processing.

Resonances (continued)

- Some work on formatting the PENDF cross sections is still needed.
- The angular distributions still need to be output in MF4 format.
- Some fixes to the derivatives are expected to be released soon.
- Basically, this work adds major new capabilities that will be useful for existing ***rm*** evaluations and upcoming ***rml*** cases.

Release of f90 NJOY?

- No schedule has been set.
- Additional work on the recent additions and additional testing is still needed.
- Work on the manual is still needed.