I.A. MODIFICATIONS AND ADDITIONS IN REVISION 8

Modifications, additions, and improvements to SAMMY subsequent to the publication of Revision 7 of this manual are summarized here. Because the time elapsed after the release of Revision 7 is relatively short, and this author is now officially retired, there are relatively few changes to be reported here.

New features have been added to SAMMY.

1. Energy-dependent nu for eta calculation; see card set 11 in Table VI B.2 (PARameter file) for details. See also test case tr176.
2. Extensive revisions have been made to the self-shielding multiple-scattering (ssm) module of the code. Corrections have been made in the computation of derivatives. More input options are available; see card set 11 in Table VI.A.1 (INPut file). A separate documentation on this feature has been prepared [NL08].
3. Tabulated values (from Monte-Carlo calculations) can be used instead of SAMMY-generated double-plus scattering corrections. See Section III.D for the description and simulation sim009 for examples.
4. The "simple" resolution function may include a Gaussian whose width is a linear function of energy. See Section III.C.1.a. for details, card set 4 of Table VI B.2 for input, and test case tr022 runs *e* and *f* for examples.
5. Input resonance parameters can now be presented as reduced width amplitudes γ instead of partial widths $\Gamma = 2P\gamma^2$. In this case, resonance energies are given as $\sqrt{E_\lambda}$, and all quantities are in units of $\sqrt{\text{eV}}$. See card set 1a of Table VI.B.2 for input and test case tr002 run *k* for an example. This feature should be especially useful for situations in which a resonance is very near threshold, particularly in the case of Coulomb interactions.
6. For transmission measurements, the sample thickness may be non-uniform. In Section III.E.1.a, the sample thickness is assumed to a piece-wise linear function of radius.

Additional changes have been made in the manual.

1. Section V.A, "RECONSTRUCTING POINT-WISE CROSS SECTIONS," has been rewritten for improved legibility.
2. Section IV.E.6, "Modifying the parameter uncertainties," has been modified slightly and demoted to Section IV.E.6a. A new Section IV.E.6, "Augmenting the Resonance Parameter Covariance Matrix," has been created to describe the rationale underlying the use of additional terms (beyond those obtained from the resonance parameter covariance matrix) in generating the evaluated cross section covariance matrix.

Bugs have been repaired in some of the FORTRAN coding. Generally these bugs affected only highly specific combinations of features; many were corrected for release sammy-7.0.1. A list of modified files is given here, along with a brief description of the type of bug which has been corrected. (No guarantee is made that this list is complete.)

1. File mamr6.f – BROADening parameters in the INPut file, TZERO works too now.
2. File mmas1.f – single pass through SAMMY if pseudo cross section type.
3. File mdat2.f – initialization required for SAMMY.PLT file.
4. Files mxct21.f and mxct22.f – This bug affects multiple scattering corrections with several nuclides, in situations where the nuclide definitions are ordered differently from the spin group definitions.
5. File mclq1.f – initializations needed.
6. Files mnew0.f and mnew5.f – modified to permit the use of "RETROACTIVE" command simultaneously with "DROP SMALL VALUES OF correlation matrix".
7. File mrpi2.f – eliminate attempts to take log of negative numbers.
8. File ref/mcon0.f – added dummy subroutine to avoid having program CONVRT crash.
9. File mndf2.f – significant digits for ENDF file 32 are more properly recorded.
10. ??? reconstruct point-wise cross sections??? May 14, 2006, re Luiz & Klaus.
11. ??? proper representation of Files 2 & 32 when threshold reaction channels exist..
12. File mas/mmas1.f – setting Ktzero = 1 when MiSCellaneous parameters are in INPut file.
13. File fin/mfin3.f – writing Pardet into PAR file only if it is in PAR file originally.