Appendix A.2. MODIFICATIONS AND ADDITIONS IN REVISION 2

(This page is taken from the Introduction to Revision 2 of this manual, with ~~strikeouts and~~ {inserts} to clarify topics that might otherwise cause confusion.)

Version C of SAMMY, documented in this Revision, is currently operational on the VAX computer, on the FPS (Floating Point Systems, Inc.) AP (Array Processor) computer, and on the IBM computer. Version C incorporates all features of earlier versions of SAMMY, as documented in previous reports. Additional features of version C include:

1. Internal structural changes in the coding to accommodate VAX, FPS, and IBM computers (and hopefully to ease the transition to other computer systems).
2. Streamlining of portions of the coding to increase computation speed and decrease array storage.
3. Separation of broadening segments into logical components; e.g., Doppler broadening is now performed in a separate segment from resolution broadening.
4. A more careful choice of "auxiliary grid" for use in Doppler broadening. This new choice of grid alleviates many of the problems encountered when the experimental grid was not sufficiently dense; for such data, earlier versions of SAMMY did not include enough points in the auxiliary grid to correctly evaluate the integrals required for generating the Doppler-broadened cross section. For details, the reader is referred to ~~Section IV~~ {Section III.A}.
5. Additional user-defined options in choosing the auxiliary grid; that is, the user may inform SAMMY that the experimental grid is not dense and thus require introduction of extra points between each experimental point, or he may require even more points added near small resonances. For details, see ~~Section IV~~ {Section III} on broadening and Section VI.A for input.
6. An option to use an entirely different scheme for Doppler broadening, based on work by Luiz Leal and Richard Hwang. Details are given in Section ~~IV.D~~ {III.B.2}.
7. An option to generate averaged theoretical cross sections (or transmissions) using parameters determined from previous SAMMY runs. Details are given in Section V.C.
8. The possibility to omit one or more spin groups from a particular calculation, while retaining parameters associated with the excluded spin groups in the set of varied parameters. Thus one can analyze two disparate experimental situations and obtain one parameter set appropriate for both. See Section ~~V.D~~ {III.E.2} for details.
9. An option to suppress output of small correlation coefficients, to minimize line-printer output; see Section VI.A for input.
10. An option to input resonance energy uncertainties at the end of the line in the PARameter file; see Table ~~VI B.1~~ {VI B.2}, card set 1, for input.
11. An option to use energy-independent normalization and/or any of five different energy-dependent backgrounds; normalization and background parameters may be varied, if desired. Details are given in Section ~~V.E.1~~ {III.E.3.a}.

12. The ability to include data reduction parameters (such as numerically-defined backgrounds or dead-time correction parameters) among the set of varied parameters. Details may be found in Section ~~V.E.2~~ {III.E.3.a}.

13. The possibility of using separate radii for potential scattering vs. penetrability and shift factor; also, the possibility of using different radii for different spin groups. Any or all of the radii may be varied. Details are given in Section ~~V.D~~ {III.E.2} and VI.B.

14. A more realistic resolution broadening function, designed especially for ORELA data but hopefully useful for analysis of data from other facilities as well; see Section ~~IV.E~~ {III.C.2}

15. An option to vary the isotopic abundances within an analysis; see Section ~~V.D~~ {III.E.2}

16. The ability to output resonance parameters to ENDF/B-VI File 2 format; see Section ~~VI.F~~ {VI.F.2}.

~~One major item remaining on the "wish list" for future work is the incorporation of multiple-scattering effects for capture cross sections.~~ {This was accomplished by Revision 3.)