Appendix A.1. MODIFICATIONS AND ADDITIONS IN REVISION 1

(This page is taken from the Introduction to Revision 1 of this manual, with ~~strikeouts and~~ {inserts} to clarify topics that might otherwise cause confusion.)

Changes documented in this revision are as follows:

1. An alternative matrix-manipulation method, the (I+Q) inversion scheme, has been devised (see Sect. ~~II~~ {IV}). Use of this scheme requires that the data covariance matrix be diagonal, and that the number of data points be much larger than the number of varied parameters. When these two requirements are met, the (I+Q) inversion scheme uses significantly less computer core than does the original method, the (N+V) inversion scheme.
2. Cross-section calculations and broadening operations are now performed in two separate stand-alone segments of the computer code, since they are in fact two distinct operations. Within the broadening segment, the various broadening procedures have been sufficiently disentangled that one can, e.g., Doppler-broaden but not resolution-broaden.
3. The multilevel Breit-Wigner approximation may be used to generate cross sections; see ~~Sect. III.C~~ {Section II.B.3}.
4. New input options are explained in the tables of Section VI. NOTE: No input has been changed; a user need not fear that his or her old INP or PAR tiles are obsolete.
5. All temporary files are now called SAM??.DAT with the question marks replaced by FORTRAN unit numbers. Thus if a run bombs or is aborted, all SAMMY files may be deleted with the single command "DEL SAM??.DAT" {or the equivalent command on modern computer systems}. ~~CAUTION: If you wish to discuss with the author why your job bombed, it would be best *not* to delete these files first.~~ See Sect. ~~X.B~~ {XI.B}.
6. It is now sometimes possible to analyze very large data sets, of a thousand or more points, in one shot. This is due to the invention of a sophisticated "bookkeeping" system to use temporary files rather than in-core storage for larger arrays. ~~To decide whether your particular case will fit into the PDP10, run the code SAMEST; i.e., type 'R SAMEST' interactively and answer the questions asked. Caveat: array sizes given are estimates only, not to be trusted absolutely.~~
7. The internal FORTRAN coding of SAMMY, version O, is considerably different from version P. (While users of the code will not notice these changes, anyone wishing to implement SAMMY on his or her own computer is warned to use one version or the other and not intermix them.) A consistent nomenclature for the several types of varied parameters has been developed. Subroutines have been subdivided so that each routine deals with a single well-defined operation. Attempts have been made to standardize FORTRAN usage, to minimize necessary changes when converting to another computer. Many of these changes were designed in preparation for future revisions, including (a) more correct treatment of resolution broadening, (b) inclusion of data parameters (such as normalization or background subtraction) as varied parameters, and (c) proper treatment of multiple isotopes.