XIII.C. DIVISION OF THE PROGRAM INTO AUTONOMOUS SEGMENTS

Prior to version M5 of SAMMY (in the year 2000), the code SAMMY was actually a system of ~50 semi-autonomous codes that executed sequentially and that communicated with each other via I/O from/to temporary files. This structure was originally necessary when computer memory was small and virtual memory nonexistent, and it also had the great virtue of permitting the author to debug each segment independently of the others.

With the advent of modern computers, this independent nature of the segments became obsolete and has therefore been eliminated. The various pieces have been assembled into one code. Many (but not yet all) of the read and write operations have also been eliminated. Users will notice two immediate benefits from this modernization of the code:.

(1) Porting SAMMY to a new platform is considerably easier than in the past. Subroutine execv, the C-language (or system) routine which permitted one FORTRAN routine to initiate execution of another, was a major source of difficulty in porting the program; execv is no longer used. Also, the location (path name) of the executable files must no longer be specified within the code prior to compilation.

(2) Execution time is shortened. The author has noted improvement by as much as 70% on the test cases, though more modest gains are likely on routine runs.

The basic structure of the code has not changed, however: SAMMY still consists of semi-independent segments that are now called sequentially by a main routine. There are approximately fifty segments (or modules), not all of which are used for every SAMMY run. Table XIII C.1 describes the functions of each segment and indicates the calling sequence. The order of the segments in the table is alphabetical.

A flow chart (Figure XIII C.1) shows the order in which the most commonly used modules are invoked. The path shown across the top of the table is used for unresolved resonance region runs, and the downward path is for resolved resonance runs. Dotted boxes on the flow chart indicate modules that may be omitted in some runs; multiple entries inside a box indicate that only one of those modules is used in a particular run.

By convention, the segment name is "sam*abc*" where *abc* is replaced by the three characters listed in the table. For most of the segments, relevant files are contained within a subdirectory of the same three-character name (in lowercase, on UNIX operating systems). (Most segments also make use of subroutines in files stored in other subdirectories.) The name and location conventions are not, however, rigidly followed. Some subdirectories store files used in many segments but do not themselves constitute a segment. Other subdirectories hold coding for several segments.

In addition to the segments that operate within a SAMMY run, a number of auxiliary programs are available to be used in conjunction with SAMMY. These programs are described in Section X; most are also included in Table XIII C.1.