The program MF2 is a Fortran 77 code that uses energy eigenvalues to estimate the fraction of missing levels in an experimental set of levels containing two distinct J^{π} values. It assumes that the correct description of various eigenvalue statistics is given by the Gaussian orthogonal ensemble (GOE) of random matrix theory. Four different statistics are utilized to estimate f, the fraction of levels observed. The four values are combined to give an overall average value of f, and then the observed value of the average spacing D is combined with f to yield a estimated value for D that includes the effects of missing levels. Because a MonteCarlo process is using to combine the different statistics, slightly different values for the average f may be obtained from run to run.

The program requires the user to specify either one or two input files. One file should be specified if all levels are contained in a single file. However, if the levels for the two different values of J^{π} are in different files, the program can be told to read the two files separately. The input file(s) must be formatted as follows:

1. The first line must contain the minimum and maximum energies of the range of levels being considered. These should not necessarily correspond to specific resonances but should define the energy range over which the measurements have been performed (or over which one wishes to do the analysis). Several of the statistics depend on the overall energy range and not simply on the range encompassed by the first and last levels. If two input files are utilized and the energy ranges are not identical, the program will use the lowest of the 2 minimum values and the largest of the 2 maximum values. It is the user's responsibility to ensure that this is appropriate.
2. Each line after the first must contain a resonance energy as the first number on the line. Other values may be included on each line as long as they are not the first. The program will only read one energy per line. The input file should *not* include a blank line anywhere (including at the end).

The program assumes that the true relative frequency of each sequence is given by 2J+1 and asks the user for the 2 J values.

The output is printed both to terminal and to a user-specified output file.

Values of f below 0.5 for any method require extrapolation and should be treated with caution. They are marked as such when output but are still included in the overall determination of f.

Operation of the program may be checked using the sample input file MF2_sample_input.dat and the corresponding output file MF2_sample_output.dat. Running the program with this input takes approximately 21 seconds on a PC with a 3 GHz Pentium D processor.