

Systematically evaluate Be7 using Reduced R-matrix theory

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This report will briefly present the evaluation results of Be7, which focuses on how to make an evaluation database file for elastic scattering of charged particles, which includes the differential cross sections and their corresponding covariance matrices. We looked at three formats. The first is the tabular evaluation data, using 90 energy points and 180 angles, the advantage is that there is no interpolation at the time of invocation. The downside is that the file is particularly large, with hundreds of thousands of lines. The second scheme is to give the polynomial fit coefficient of the correlation coefficient and its covariance. It is to fit the angular distribution of the correlation coefficient of each pair of energies by a polynomial and obtain the polynomial coefficient and the corresponding covariance. Relative to the first method, the file size can be reduced by about 20 times. The disadvantage is that the error propagation formula is used to reconstruct the cross section and its covariance matrix. The third scheme is to give the polynomial fitting coefficients of the excitation functions and their covariances. It is to fit the excitation function with 180 angles and its covariance by polynomial, and obtain the polynomial coefficient and the corresponding covariance. Compared with the second method, the size of the file can be reduced by about 10 times. The disadvantage is that the error propagation formula is used to reconstruct the cross section and its covariance matrix. However, the construction formula is very simple and the calculation is very small. We present these recommendations for expert review.

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