Theoretical analysis of ^{6}Li(*n*, *t*) reaction at low energies

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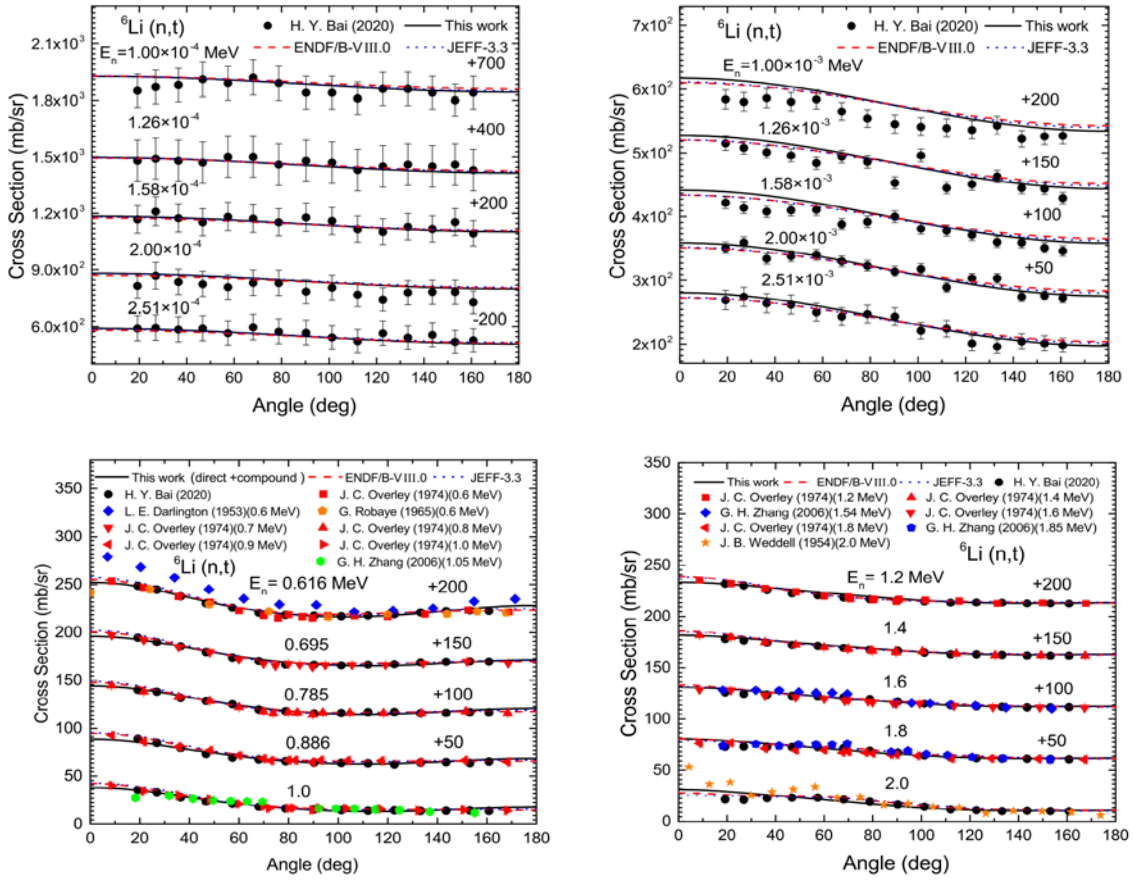
The differential cross sections and angle-integrated cross sections of ^{6}Li(*n*, *t*) reaction were regarded as an important subject in tems of their application value in nuclear technology and engineering. To consider the effects of energy levels of the compound nucleus ^{7}Li on triton emission, an effective excited energy formula was proposed, as a function of energies and widths of the discrete energy levels in this work. The differential cross sections and angle-integrated cross sections of ^{6}Li(*n*, *t*) reaction in energy range from 1.0 eV to 3.0 MeV were calculated by knock-out model with the assumption of ^{6}Li consisting of triton+^{3}He or deuterium+ alpha particle. The calculated results reasonably reproduced the recent experimental data and the evaluated data from ENDF/B-VIII.0 and JEFF-3.3. Furthermore, it is noted that the angular distributions in incident energy range from 0.1 to 1.0 MeV could be successfully explained by the Hauser-Feshbach model.

The comparisons of calculated differential cross section with experiments and evaluations at some energies are given below[1]:



[1] J. Q. Hu *et al*. Phys. Rev. C, **103,** 044611 (2021)