levels of low spin in this nucleus.

The parameters of the 8.998-MeV level have been reevaluated and the data listed in Table I of Ref. 5 for ^{150}Sm should be replaced by the following data for ^{144}Sm: $\Gamma = 0.27 \pm 0.08$ eV; $\Gamma_0 = 0.063 \pm 0.013$ eV; level spacing $D = 110$ eV; reduced transition strength $K_{E1} = 28.6\times 10^3$ eV MeV^{-4} and $K_{M1} = 786\times 10^3$ eV MeV^{-4}; the strength parameter $c = 5.67\times 10^{-5}$. This value of c is within a factor of 3 of the value 2.2×10^{-5} derived by Axel[12] by extrapolation of the giant electric dipole resonance and is now in good agreement with the other values presented in the above-mentioned table.

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Possible Statistical-Model Explanation for the ^{26}Mg(p, t)^{24}Mg Reaction at $E_p = 26$ MeV*

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A simplified Hauser-Feshbach treatment of angular distributions of the ^{26}Mg(p,t)^{24}Mg reaction populating levels in ^{24}Mg up to 7.59-MeV excitation energy yields good agreement with the data for several of the states above the 1.37-MeV 2^+ level. In particular, it is not necessary to invoke a direct two-step process to explain the magnitude and shape of the 3^+ level at 5.22 MeV excitation as suggested by Shepard, Kraushaar, and Baer.

Angular distributions from the ^{26}Mg(p, t)^{24}Mg reaction to the first 10 levels in ^{24}Mg have been measured recently by Shepard, Kraushaar, and Baer (SKB)[1] at bombarding energies of 25.4, 26.8, and 27.3 MeV. SKB present arguments against statistical contributions being important for the weakly excited states and suggest the need for two-step processes to explain the data. However, no calculations have been performed to prove this point more rigorously. In the present note it is shown that a simplified Hauser-Feshbach treatment of the data gives good agreement for several of the weakly excited states above the 2^+ (1.37 MeV) state.

For calculation of the angular distributions, the usual form of the average cross section in the statistical model[2] was used with the simplification given by Eberhard *et al.*,[3] where the sum over all exit channels into which the compound nucleus can decay is replaced by an explicit expression obtained from the Fermi-gas model. In this approximation, Eq. (19) of Ref. 3, the parameters appearing in the sum over exit channels are the density of spin-zero states in the compound nucleus ($\rho = \Gamma_0/D_0$) and an average value of the spin-distribution parameter (σ) for the various residual nuclei reached by the decay of the compound nucleus. The compound nucleus was assumed to decay predominantly by neutron, proton, and α-particle emission, and the calculated values[4] for these parameters were $\rho = 1570$ and $\sigma = 3.2$, in qualitative agreement with the work of Gilbert and Cameron[5] and Gadioli and Zetta.[6] These values were kept fixed throughout the analysis.

The proton and triton optical potentials given by SKB[1] were used to find the entrance and exit channel transmission coefficients, respectively. All the potential parameters were kept fixed and in

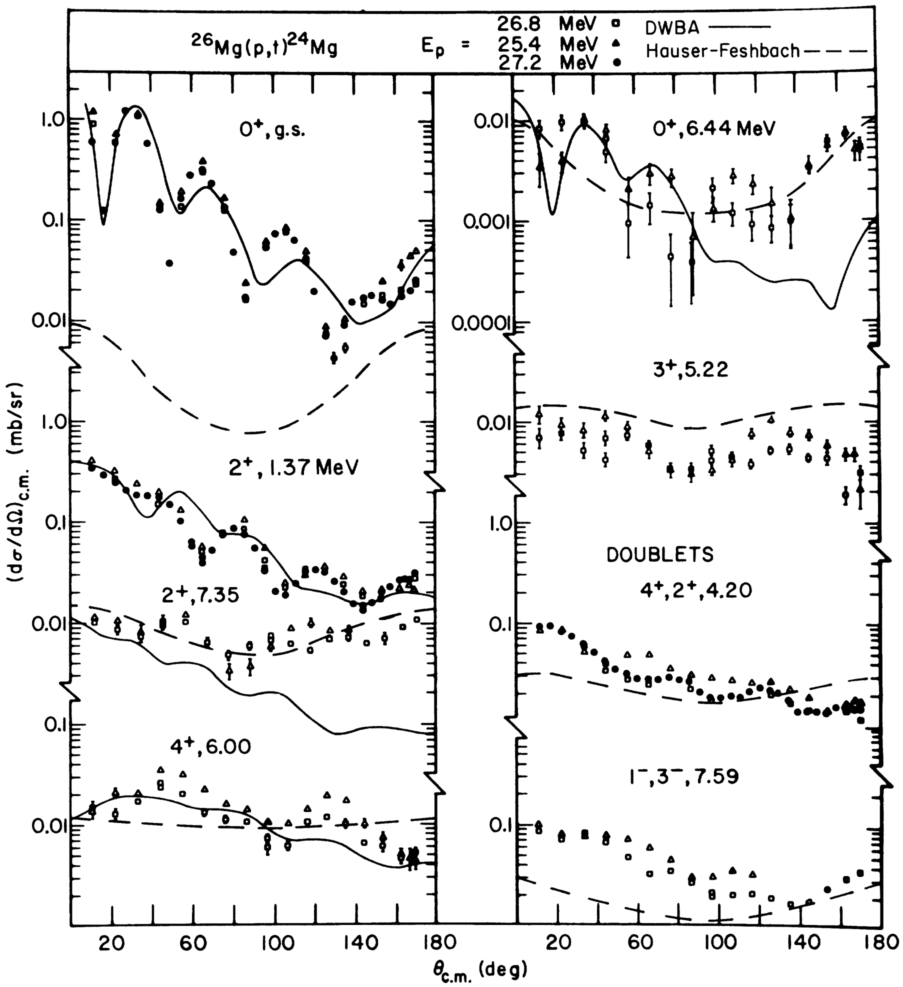

FIG. 1. Angular distributions and DWBA calculations which appeared as Fig. 2 in Ref. 1 with the Hauser-Feshbach calculations added.

the triton channel the center-of-mass energy appropriate to each level in ^{24}Mg was used. The results of the calculations[7] for $E_p = 26.8$ MeV are shown in Fig. 1 as dashed curves, along with the distorted-wave Born-approximation (DWBA) calculations of SKB.[1] Figure 1 is a reproduction of SKB's Fig. 2 with the Hauser-Feshbach calculations superimposed.

For the 0^+(g.s.) and the first 2^+ (1.37 MeV) cross sections the DWBA calculations give a good description of the data. The Hauser-Feshbach contributions to both cross sections are negligible and only the Hauser-Feshbach calculation for the 0^+(g.s.) is shown. The calculated values for the doublets at 4.20 and 7.59 MeV are the sums of the predictions for each component added with equal weight for each level. The agreement in shape and magnitude between the Hauser-Feshbach calculations and the data for the levels at 7.35 MeV (2^+), 6.44 MeV (0^+), and 5.22 MeV (3^+) is quite good, considering that no parameter variations have been made in these calculations. The Hauser-Feshbach calculations for the 6.00-MeV (4^+) state as well as the doublets at 4.20 and 7.59 MeV indicate the need for a direct contribution in order to describe the forward angles. The ability of the statistical-model calculations to describe the states weakly excited by the ^{26}Mg(p, t)^{24}Mg reaction would seem to preclude the need to invoke two-step processes to explain the population of the 3^+ level at 5.22 MeV.

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