PROTON STRIPPING TO 8⁻ STRETCHED STATES IN ^{52}Cr AND ^{60}Ni

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Proton stripping spectroscopic factors from the ^{59}Co(α,t)^{60}Ni reaction to known[1] 8⁻ states of configuration $(f_{7/2}^{-1}g_{9/2})$ have been obtained and compared to B(M8) electron scattering strengths. This work has been accepted for publication.[2] A similar analysis for the ^{51}V(α,t)^{52}Cr reaction could not be carried out until the 8⁻ states were located by inelastic scattering. This information is now available for many states[3] and is complemented by pion inelastic scattering results.[3]

Figure 1 shows a sample stripping spectrum for the ^{51}V(α,t)^{52}Cr reaction with a particularly prominent peak observed at 15.48 MeV. This is also the largest 8⁻ peak in electron scattering. Figure 2 shows the stripping angular distribution of this state compared to the DWBA calculation with 9% of the 8⁻ T = 3 sum rule strength, using the methods of our ^{60}Ni analysis.[2]

The lowest 8⁻ state in electron scattering was found at 8.099 MeV and was seen to be much stronger in π^- than π^+ scattering. This indicates that this is a neutron particle-hole promotion, and, indeed, we do not observe this state in proton stripping.

Many of the peaks seen in Fig. 1 exhibit $\ell = 4$ stripping angular distributions. We will be able to extract spectroscopic factors for many of these that correspond to the 8⁻ states. In contrast to the case of ^{60}Ni, where T = 2 and T = 3 final states are well separated, a broad distribution of 8⁻ strength is found in ^{52}Cr, with only the 15.48 MeV peak showing appreciable concentrated strength. This runs counter to the idea that greater collectivity in ^{60}Ni would spread any single particle strength more widely there.

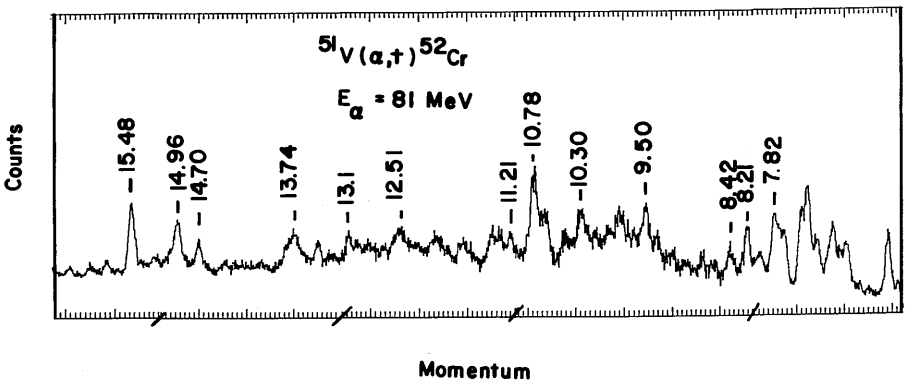

Figure 1. Composite spectrum from the ^{51}V(α,t)^{52}Cr stripping reaction at a bombarding energy of 80.9 MeV. The spectrum above 8 MeV excitation energy was taken at a laboratory scattering angle of 7° while that below 8 MeV was taken at 17°.

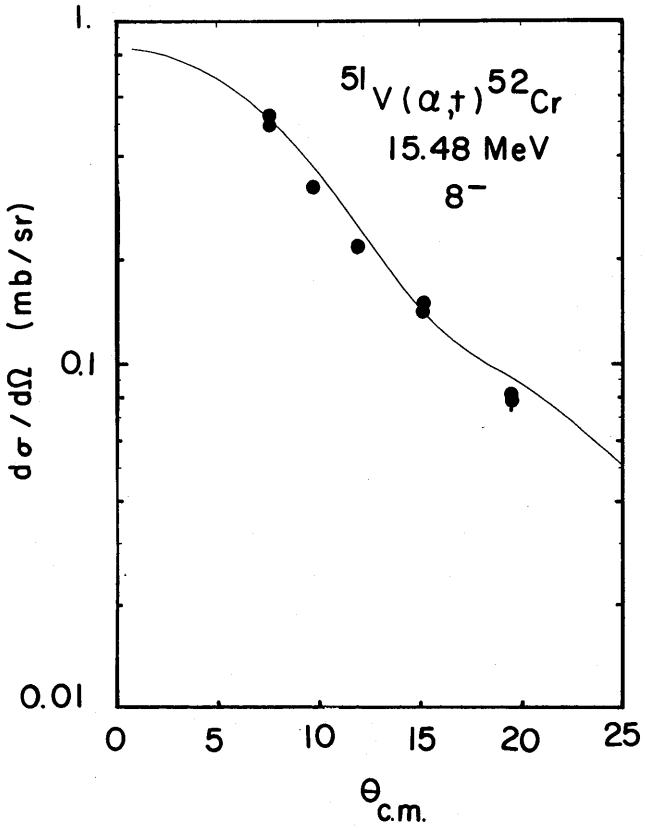

Figure 2. Experimental angular distribution for the 15.5 MeV state in the $^{51}V(\alpha,t)^{52}Cr$ stripping reaction compared to the DWBA calculation.

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1) R. A. Lindgren et al., Phys. Rev. Lett. 47, 1266 (1981).

2) R.J. Peterson, et al., Phys. Rev. C in press.

3) B. Zeidman et al., private communication (1986).