expected form of the correlation function given by equation (1), as shown by the accompanying fit.

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POLARIZATION TRANSFER IN INELASTIC PROTON SCATTERING FROM ^{12}C AND ^{16}O

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During the last year, we have continued our investigation of the in-plane polarization transfer coefficients $D_{LL'}$, $D_{LS'}$, $D_{SL'}$, $D_{SS'}$ for 200-MeV proton inelastic excitation. Our principle goal in this study is to exploit the enhanced sensitivity of these coefficients to spin-dependent terms in the effective nucleon-nucleon interaction in order to provide a sensitive test of various proposed forms of the interaction. We have therefore concentrated on the inelastic excitation of unnatural-parity transitions for which the nuclear structure is relatively well known.

Measurements have recently been completed for excitation of the 1^+, T=0 state in ^{12}C (12.7 MeV), and the 4^-, T=0 (17.79 MeV and 19.80 MeV) and 4^-, T=1 (18.98 MeV) states in ^{16}O. Preliminary results of these experiments have been reported at several conferences[1-2], and the final analysis of these data is expected to be completed by early summer of 1986.

We have also extended these measurements to include the excitation of the 1^+, T=1 state in ^{12}C (15.11 MeV). This transition occurs predominantly by the isovector tensor and central components of the interaction.

Preliminary data for the 1^+, T=1 and the 4^-, T=1 transitions are shown in Figs. 1 and 2. The indicated distorted-wave impulse approximation calculations employ the free effective interactions generated by Franey and Love[3], von Geramb[4] from the Paris potential, and Holinde[5] from the Bonn potential. All of these calculations produce similar predictions over the angular range of interest, and good qualitative agreement with the measurements is achieved. This is in contrast with our observations for the isoscalar transitions, for which large differences are observed among the predictions, reflecting large ambiguities in the relevant terms of the interaction.

Love[6] has recently discussed these isovector data, and has shown that the qualitative features displayed in Figs. 1 and 2 can be understood within the framework of a simple plane-wave impulse approximation in which one focusses on the specific roles of the longitudinal and transverse parts of the t-matrix interaction. The negative values of $D_{LL'}$ and $D_{SS'}$ at

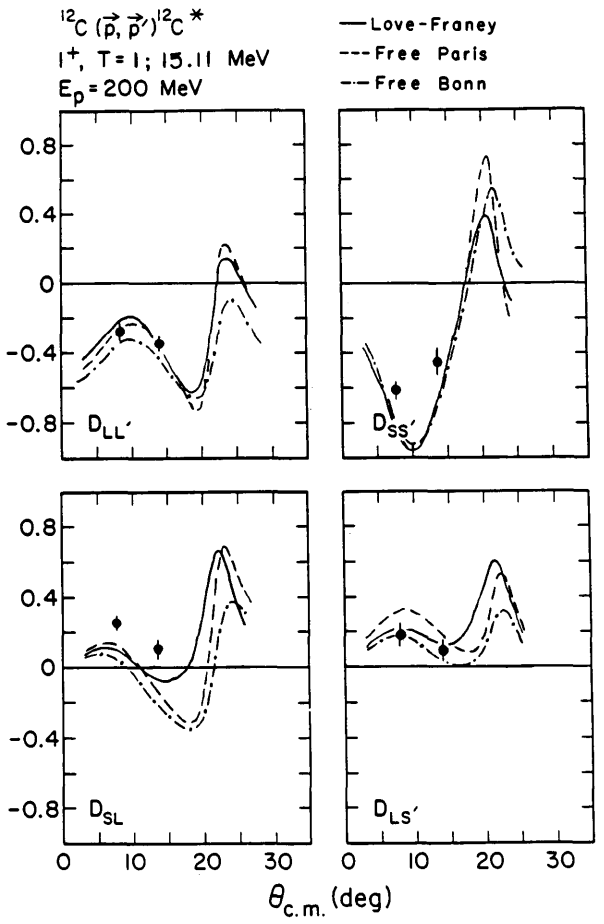

Figure 1. Polarization transfer coefficients for the 200-MeV inelastic proton excitation of the 1^+, T=1 state (15.11 MeV) in ^{12}C.

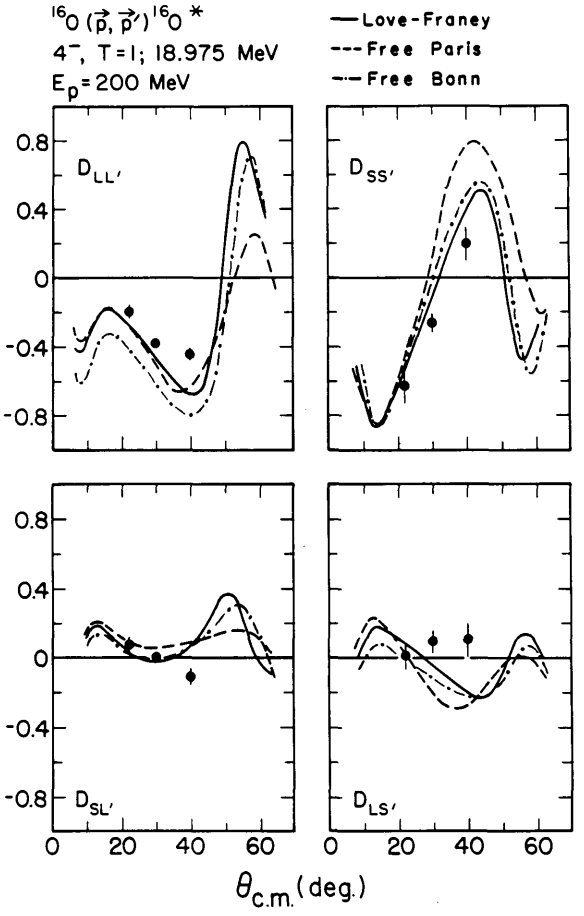

Figure 2. Polarization transfer coefficients for the 200-MeV inelastic proton excitation of the 4^-, T=1 state (18.98 MeV) in ^{16}O.

forward angles reflect the dominance of the transverse term at values of the momentum transfer less than about 300 MeV/c. The zero-crossing evident in the $D_{SS'}$ distributions results from the near-equality of the transverse and longitudinal terms near 300 MeV/c, and the growing dominance of the longitudinal term with increasing momentum transfer.

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