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50 MeV pion inelastic scattering to the 1^+ doublet in ^{12}C

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Cross sections have been measured for the excitation of the 12.71 MeV, $T=0$, and 15.11 MeV, $T=1$, 1^+ states in ^{12}C by 50 MeV $\pi^\pm$ scattering. The cross section ratio, $R=\sigma(12.7\text{ MeV})/\sigma(15.1\text{ MeV})$, was found to be 7.5 ± 1.5 for π^+ and 6.6 ± 1.5 for π^- at 50 MeV, giving an isospin averaged value of $R=7.05\pm1.06$. These results indicate that the anomalous behavior of R is attributable to the energy dependence of the $T=1$ 1^+ level. The data also indicate that the impulse approximation is probably invalid at 50 MeV, contrary to the conclusions of a recent study at 65 MeV.