

our limiting values of λ^2 the sum of twice the statistical error in λ^2 and our estimate for the systematic error in the measurements. The systematic error was largely a result of variations in the efficiency of the spark chamber as a function of momentum channel number. The structure in the measured momentum spectra introduced by these variations did not have the same functional form as the resolution function and thus did not lead to false peaks in the inelastic spectrum. The limits on λ^2 derived in this way are shown in Figure 3. The values of the e' production cross section corresponding to these limits ranged from 0.2 to $3.0 \cdot 10^{-33}$ cm^2/sr at scattering angles of 55° and 60° , and from 0.7 to $3.0 \cdot 10^{-33}$ cm^2/sr at 50° . Figure 4 shows the results of this experiment compared with the results of previous experiments.^{29,30,31}

E. RESULTS AND CONCLUSIONS

In this experiment we found no evidence for the existence of a heavy electron, e' , in the mass range investigated, having assumed the e' would be electroproduced through reaction (1) and thus produce a sharp peak in the recoil proton momentum spectrum. We found limiting values for the size of a possible peak by fitting the elastic peak shape to the measured spectra at a series of values of momentum separated by an amount small compared to the width of the elastic peak. The values obtained for possible peak heights were consistent with zero within the errors of the measurements.