

SYNOPSIS

The experimental work done at N.B.U. and described in this thesis has verified the new calculations by Tseng and Pratt (1972) and by I. Øverbo (1979) of cross-section for atomic pair production by photons of energy in the threshold region.

It is found that the calculations of Tseng and Pratt agree excellently with experimental results on medium and high Z atoms and the calculations of Øverbo are supported by the results of measurements on high Z elements upto  $Z = 92$ .

These conclusions mean that the screening effects of the nuclear Coulomb field by atomic electrons are important near threshold and cannot be ignored as was done in earlier theoretical calculations (e.g. Øo -67).

However, the state of calculations taking screening and other effects which are important near threshold has to be such that the theory is valid even at the <sup>P</sup>Photon energy of 1.1 Mev.