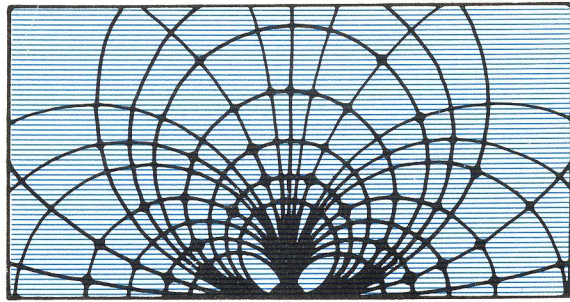


SECOND EUROPEAN CONFERENCE
ON
ATOMIC AND MOLECULAR PHYSICS



2'ECAMP

Book of Abstracts

FREE UNIVERSITY, AMSTERDAM, THE NETHERLANDS
APRIL 15-19, 1985
Editors: A.E. de Vries, M.J. van der Wiel

ABSOLUTE VALUES OF THE INELASTIC e^-/Ar CROSS SECTIONS

D. Filipović, V. Pejčev, B. Marinković and L. Vušković
 Institute of Physics, P.O.Box 57, 11001 Beograd, Yugoslavia

In order to determine absolute values of inelastic differential cross sections one can calibrate them in respect to elastic ones at the same energy and angle. We obtained DCS on elastic and inelastic scattering on Ar in electron energy range from 10 to 100 eV /1/. Using these data we calculated integral cross sections. Preliminary data are shown in figure 1. In that energy range total (σ_{tot}) and ionization (σ_i) cross sections are well known. In the same figure total cross section of Jost et al. /2/ with accuracy of 5% is shown. The other results of σ_{tot} /3,4/ agree very well with Jost's data. Ionization cross section, presented here, is the best mean value from de Heer et al. /5/.

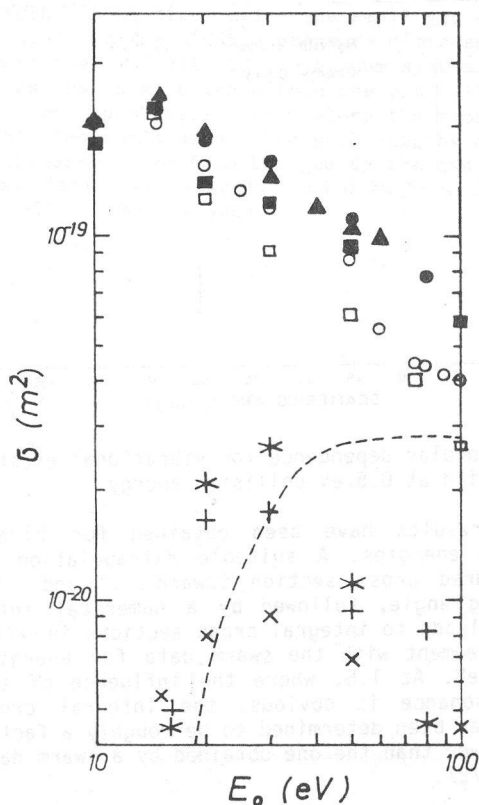


Fig. 1. σ_{tot} : \blacktriangle Jost et al., \bullet present, \blacksquare JPL (Srivastava et al. and Chutjian and Cartwright); σ_{el} : \circ present, \square Srivastava et al.; σ_{exc} : $*$ present; \times Chutjian and Cartwright, $+$ Padial et al.; σ_i : --- de Heer et al.

Integral cross sections for elastic scattering calculated from present and Srivastava's et al. /6/ DCS measurements are also shown. The sum of integral cross sections for excitations (σ_{exc}) are data of Chutjian and Cartwright /7/ and present measurements /1/ as well as data calculated by Padial et al. /8/. The yield of unresolved states near ionization threshold is estimated from energy-loss spectra. One can see that the influence of inelastic scattering to the total cross section is not negligible in this energy range. The sum of JPL (elastic /6/ and inelastic /7/ data) with ionization /5/ give good agreement with total cross section. Even better agreement one can get by adding present integral cross sections to the ionization /5/. Disagreement between Srivastava's et al. and present data in the integral elastic cross sections is not so serious as it is in the comparison between inelastic cross section (/7/ and present). This disagreement is due to inelastic to elastic calibration. We have been trying to establish trustful way for normalization before we publish our DCS data. Current progress will be presented at the conference.

REFERENCES

- /1/ D. Filipović, V. Pejčev, B. Marinković and L. Vušković, Contributed Papers, p.120, XII SPIG, Šibenik, Yugoslavia, 1984.
- /2/ K. Jost, P.G.F. Bisling, F. Eschen, M. Felsmann and L. Walther, Abstracts of Contributed Papers, p.91, XIII ICPEAC, Berlin, 1983, and private communication.
- /3/ J.C. Nickel, K. Imre, D.F. Register and S. Trajmar, Submitted to J.Phys.B(1984).
- /4/ R. Wagenaar, Ph.D. thesis, Amsterdam, 1984.
- /5/ F.J. de Heer, R.H.J. Jansen and W. van der Kaay, J.Phys.B, 12 (1979) 797
- /6/ S.K. Srivastava, H. Tanaka, A. Chutjian and S. Trajmar, Phys.Rev.A, 23 (1981) 2156.
- /7/ A. Chutjian and D.C. Cartwright, Phys. Rev.A, 23 (1981) 2178
- /8/ N.T. Padial, G.D. Meneses, F.J. da Paixão and Gy. Csanak, Phys.Rev.A, 23 (1981) 2194.