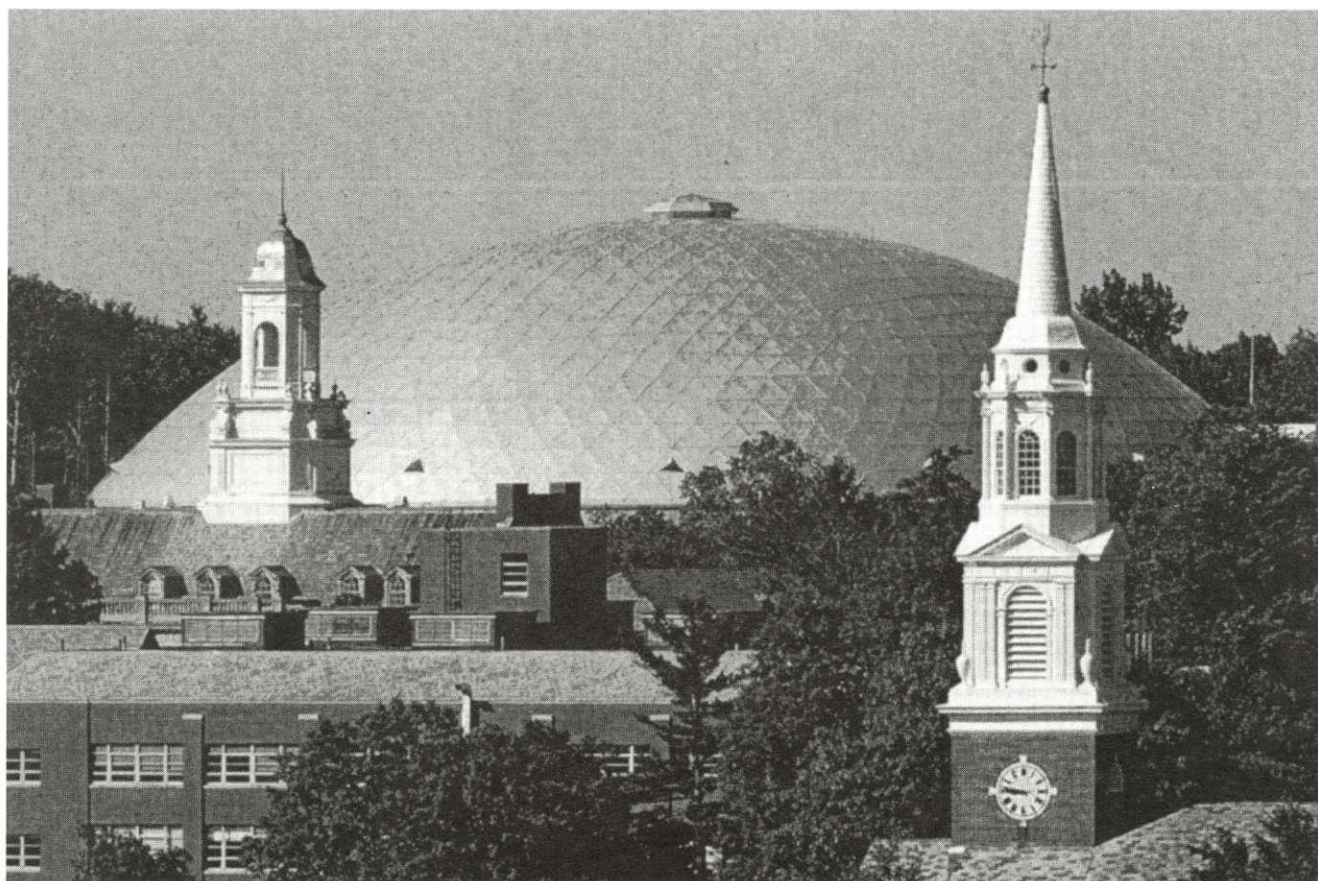


BULLETIN

OF THE AMERICAN PHYSICAL SOCIETY

PROGRAM OF THE 2000 MEETING OF THE DIVISION
OF ATOMIC, MOLECULAR, AND OPTICAL PHYSICS



June 14–17, 2000
Storrs, Connecticut

June 2000
Volume 45, No. 3

L9 48 ELECTRON IMPACT EXCITATION

L9 49 Electron impact excitation of argon: II. The lowest resonance $4s[3/2]_1$ and metastable $4s[3/2]_2$ and $4s'[1/2]_0$ states
D.M. FILIPOVIĆ, B. MARINKOVIĆ, V. PEJČEVIĆ, *Institute of Physics, P O Box 57, 11001 Belgrade, YU* L. VUŠKOVIĆ, *Old Dominion U., Norfolk, VA* Absolute normalized differential electron - impact excitation cross sections (DCS's) are presented for the lowest three electronic states of argon: the lowest resonance

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$4s[3/2]_1$ ($1s_4$ in Pashen's notation) state and two neighboring metastable $4s[3/2]_2$ and $4s'[1/2]_0$ ($1s_5$ and $1s_3$ in Pashen's notation) states. Direct, i.e. free of cascade contribution, excitation cross sections were experimentally obtained for the $4s[3/2]_1$ at 20, 40, 50 and 80 eV and for the $4s[3/2]_2$ and $4s'[1/2]_0$ at 20 and 40 eV impact energies. The measurements were performed at scattering angles between 5° and 150° with angular resolution better than 2° . The ratios: $r = \text{DCS}(4s[3/2]_2) / \text{DCS}(4s'[1/2]_0)$ and $r' = \text{DCS}(4s[3/2]_1) / \text{DCS}(4s'[1/2]_1)$ were determined and compared with other available experimental and theoretical results. Absolute DCS scale was established with respect to DCS's of the $4s'[1/2]_1$ state reported¹, using the peak intensity ratios in the energy-loss spectra. The DCS's were extrapolated to 0° and 180° and numerically integrated to yield integral, momentum transfer and viscosity cross sections.

¹Filipović et al., J. Phys B, At. Mol. Opt. Phys. **33** accepted (2000).