

ELECTRON EXCITATION CROSS SECTIONS FOR THE C// TRANSITIONS
 $2s^2 2p \text{ 'P' } \rightarrow 2s^2 2p \text{ 4P, } 2s2p^2 \text{ 'D, 'S, AND } 2_p$

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Experimental and theoretical excitation cross sections will be reported for the $2s^2 2p^2 P^o \rightarrow 2s^2 2p \text{ 4P, } 2s2p^2 D, \text{ 'S, and } 2_p$ in C II. Use is made of electron energy-loss and merged-beams methods. The transition wavelengths (energies) are $\lambda = 2324 \text{ \AA}$ (5.34 eV), $\lambda = 1335 \text{ \AA}$ (9.29 eV), $\lambda = 1036 \text{ \AA}$ (1.96 eV) and $\lambda = 904 \text{ \AA}$ (1.372 eV), respectively. The energy ranges covered for the four transitions extend from below the thresholds, and are as follows:

Transition	Energy Range
$2s^2 2p \text{ 2P'' } \rightarrow 2s^2 2p \text{ 'p}$	4.0 - 25 eV
$2s^2 2p \text{ 2P'' } \rightarrow 2s2p^2 \text{ 'D}$	9.4 - 22.4 eV
$2s^2 2p \text{ *P'' } \rightarrow 2s2p^2 \text{ *S}$	9.5 - 22 eV
$2s^2 2p \text{ 2P'' } \rightarrow 2s2p^2 \text{ 2P}$	15.3 - 24.2 eV

As in previous work with O II [1], care was taken to assess and minimize the metastable fraction in the C // beam, inelastically —back-scattered electrons were collected, and dead-time corrections carefully assessed. For some earlier results, a forward/backward correction was used to account for loss of signal scattered in the 90-180° (laboratory) direction. This correction was determined directly from later measurements performed with a modified detection system capable of measuring separately the forward and backward components. The correction was additionally compared with present 11-state **R-Matrix** calculations of the forward/back scattering ratio.

Comparisons are made between the present experimental results and other measurements [2-3]; as well as with present 11-state **R-Matrix** calculations and published 10-state **R-Matrix** calculations [4] for each transition,

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References

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