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C-R model for Ar plasmas ALLAN STAUFFER, York University, Toronto, REETESH GANGWAR, LALITA SHARMA, RAJESH SRIVASTAVA, IIT-Roorkee, India — We have used a collisional-radiative model to calculate the population densities of the various $3p^5 4s$ and $3p^5 4p$ fine-structure levels in both CCP and ICP low temperature Ar discharge plasmas. This model included cross sections for the excitation of various fine-structure levels of Ar calculated with our Relativistic Distorted-Wave approximation. These calculations included distinct Dirac-Fock target wave functions for each fine-structure level and the projectile electron distorted waves were obtained from the continuum Dirac equations. Cross sections for excitation to the $3p^5 4s$, $3p^5 4p$, $3p^5 3d$, $3p^5 5s$ and $3p^5 5p$ levels from both the ground state and $3p^5 4s$ levels were included. We have compared our results with recent OES measurements [1] as well as calculations using cross sections derived from the simple Drawin formula. Our results are in good agreement with the measurements especially for the CCP plasma.

[1] Xi-Ming Zhu and Yi-Kang Pu, J. Phys. D: Appl. Phys. **43**, 015204 (2010).

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