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Double Photoionization of Atomic Oxygen MADHUSHANI WICKRAMARATHNA, THOMAS GORCZYCA, Western Michigan University, CONNOR BALLANCE, Queen's University Belfast, WAYNE STOLTE, National Security Technologies, SSRL, and ALS — Double photoionization of atomic oxygen was first measured at Aladdin, a second-generation synchrotron source, at lower resolution (Angel and Samson, PRA, 38, 5573, 1988). Here we present new experimental and theoretical results for the direct double photoionization of atomic oxygen. The experiment was performed at the Advanced Light Source for photon energies near the double-ionization threshold, revealing rich resonance structures converging to multiple single-ionization thresholds. State-of-the-art calculations were performed using the R-matrix with pseudostates (RMPS) method (P. G. Burke, *R-matrix Theory of Atomic Collisions*, Springer 2011) as implemented by Gorczya and Badnell (JPB, 30, 3897, 1997), and recently applied, in a converged representation, to the double photoionization of helium (T. W. Gorczyca et al., JPB, 46, 195201, 2013). The much-larger calculation required for oxygen, due to the many target state symmetries compared to helium, necessitated a parallel RMPS approach. Comparison between theoretical and experimental results shows overall qualitative agreement but also some puzzling discrepancies: experimental features that are not reproduced by the RMPS calculations.

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