

Abstract Submitted  
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**CI- MBPT calculations of the iodine line strengths<sup>1</sup>** DMYTRO FILIN, IGOR SAVUKOV, JAMES COLGAN, LANL — Iodine is a promising alternative to expensive xenon as propellant for electric propulsion devices. Iodine optical spectroscopy is a valuable diagnostic tool for optimization of the iodine propellant. Recently, some measurements have been conducted with cells containing iodine plasma, and iodine atomic absorption at several wavelengths (911 nm, 906 nm, 206 nm, 1315 nm) was measured with a Ti:Sa laser. Motivated by these experiments and future applications, we have calculated energy levels and line strengths for the iodine atom using configuration-interaction many-body perturbation theory (CI-MBPT). Since no transition data are available for iodine in the literature, we also performed calculations for Br I atom, which has some data, and found good agreement between our theory and the experiment. In iodine, the CI-MBPT gives energies in good agreement with experiment, and we believe that our predicted transition probabilities are also quite reliable and will be useful for iodine spectroscopy.

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