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Improvements in Modeling Au Sphere Non-LTE X-ray Emission[1]

MORDECAI ROSEN, HOWARD SCOTT, LAURANCE SUTER, STEPHANIE HANSEN, LLNL — We have previously reported on experiments at the Omega laser at URLLE, in which 1.0 mm in diameter spheres, coated with gold, were illuminated at either 10^{14} W/ cm^2 (10 kJ / 3 ns) or 10^{15} W/ cm^2 (30 kJ / 1 ns). Spectral information on the 1 keV thermal x-rays, as well as the multi-keV M-band were obtained. (E. Dewald, M. D. Rosen, et al to be published in PoP). We compared a variety of non-LTE atomic physics packages to this data with varying degrees of success. In this paper we broaden the scope of the investigation, and compare the data to newer models. One is a vastly improved Detailed Configuration Accounting (DCA) method. The other model involves adjustments to the standard XSN non-LTE model which lead to a better match of coronal emission as calculated by XSN to that calculated by a more sophisticated stand-alone model known as SCRAM. We show some improvements in the agreement with Omega data when using either of these new approaches.

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