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Jupiter's X-ray aurora via polar ion precipitation JACKSON YOUNG, STEPHEN HOUSTON, Univ of Kansas — Jupiter's auroral X-ray emission was first observed by the Einstein X-ray Observatory in 1979 and has since been observed over the past 20 years by the Roentgen satellite, Chandra X-ray Observatory, and XMM-Newton. The strong X-ray emission produces a spectacular 1 GW of total power at the polar caps. There has been extensive research of X-ray production from incident electrons; however, this has not been able to account for the full power of the generated X-rays. The remainder of the X-ray production can be modeled and reproduced into observable results by the precipitation of several MeV oxygen and sulfur ions from the outer magnetosphere into an atmosphere that has been adapted to the auroral conditions. The present research uses a revised model of a hybrid Monte Carlo method with varying oxygen ion energies (10 keV/u – 5 MeV/u) and updated collision cross-sections to concentrate on the ionization of the atmosphere, generation of secondary electron fluxes and their escape from the atmosphere, and characterization of the H2 Lyman-Werner band emission. Predictions relevant to awaited NASA's Juno results are made: escaping electrons with an energy range of 1 eV to 6 keV, H2 band emission rates of 80 kR, and downward field-aligned currents of at least 2 MA.

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