Abstract Submitted
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Electron impact of CO, CO_2, and N_2 using the MAVEN IUVS flight spare[1] CHARLES P. MALONE, Jet Propulsion Laboratory, JOSEPH M. AJELLO, Jet Propulsion Laboratory AND Laboratory for Atmospheric and Space Physics, University of Colorado, ALAN C. HOSKINS, WILLIAM E. MCCLINTOCK, Laboratory for Atmospheric and Space Physics, University of Colorado, PAUL V. JOHNSON, Jet Propulsion Laboratory — The Imaging Ultraviolet Spectrograph (IUVS) flight spare, part of the Mars Atmosphere and Volatile and EvolutioN (MAVEN) mission, was used to observe the fluorescence resulting from electron-impact on CO, CO_2, and N_2. The experimental investigation was carried out using a large vacuum chamber, a detector platform that provided vertical and horizontal movement, and the MAVEN IUVS flight spare. An electron gun and Faraday cup, along with suitable Helmholtz coils, were mounted $\sim$ 0.5m apart and perpendicular to the line-of-sight of the IUVS. The IUVS consists of far-ultraviolet (FUV) and a middle-ultraviolet (MUV) detectors, covering the 110-190nm and 180-340nm wavelength ranges, which observed the photon emissions resulting from an optically-thin swarm of gas that was excited by electrons of fixed energies. The imager platform allowed the fluorescence to be observed at multiple vertical positions relative to the on-center measurement, thus enabling direct observation of photons from long-lived metastable states. Absolute emission cross sections, glow profiles, and lifetimes of numerous transitions will be presented.

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