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X-ray emission from charge-exchange: An astrophysical plasma diagnostic tool. THOMAS CRAVENS, INA ROBERTSON, University of Kansas, STEVEN SNOWDEN, MICHAEL COLLIER, NASA Goddard Spaceflight Center, KIP KUNTZ, John Hopkins University, MIKHAIL MEDVEDEV, University of Kansas, KENNETH HANSEN, University of Michigan — Astrophysical x-rays typically come from hot collisional plasmas, such as the solar corona or supernova remnants. However, x-rays can also be produced in cooler gas by charge exchange (CX) collisions between neutrals and highly-charged ions. The CX mechanism applied to the solar wind has been shown to generate x-ray emission at comets, in the terrestrial magnetosheath, and throughout the heliosphere (where the solar wind interacts with incoming interstellar neutral gas). Heliospheric emission is thought to make a significant contribution to the observed soft x-ray background (SXRb). Efforts are underway to distinguish this contribution from emission due to hot interstellar gas and the galactic halo. X-rays from CX could provide diagnostic information (e.g., line ratios) on regions where hot astrophysical plasma comes into contact with neutral gas.

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