

Abstract Submitted
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X-ray Tomography of the Outer Heliosphere¹ MIKHAIL MEDVEDEV, University Of Kansas, T. CRAVENS, I. ROBERTSON², G. ZANK, V. FLORINSKI, UC Riverside — The heliosphere is glowing in X-rays due to charge-exchange (CX) collisions between solar wind ions and neutrals from the ISM. The overall appearance of the X-ray glow is determined by the interaction of the Solar wind and the local ISM. Spectra deliver information on the Solar wind parameters (e.g., temperatures and densities of the minor species – highly stripped ions) and the details of the Solar wind interaction with neutrals. Using numerical models for the heliosphere, we traced the CX evolution of 45 different solar wind ions along the wind stream-lines. The evolution from high- to low-ionization states is clearly seen, thus manifesting the collisional thickness effect on the outer heliosphere composition. From CX transitions, we determine the X-ray emissivity and create surface brightness and spectral maps for any viewing direction (for both the inside-out and outside view). The evolution of the wind ion-composition and the accompanying spectral changes across the heliosheath (from nose to tail) are remarkable and can serve as a diagnostic for the wind-ISM interaction. Chandra and XMM-Newton are well suited for this task. Similar models can be made for astrospheres of nearby Sun-like stars.

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