

### **Charge-exchange X-ray emission**

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X-ray and EUV emission due to charge exchange (CX) between highly charged ions and neutrals has recently been recognized to occur in a number of astrophysical objects. In particular, comets and planets have been observed to be the source of such an emission due to the interaction between atoms and molecules from their atmospheres and impacting solar wind high ions. I will review measurements and modelling, with special emphasis on the diffuse soft X-ray emission from the heliosphere, the cavity carved by the solar wind in the interstellar medium. This omni-directionnel emission is due to the interaction between solar wind ions and interstellar neutrals flowing within the heliosphere. It is found today to be responsible for a large fraction of (if not all) the emission previously attributed to the Local Interstellar Hot Bubble (a 100 parsecs cavity around the Sun supposed to be filled with one million K gas). I will also discuss a number of potential CX X-ray emitters in galaxies.

Because new X-ray satellites have enough sensitivity and spectral resolution to detect the signatures of the CX lines, these findings have stimulated experimental work on the cascading photon spectra for individual ions, and there is now a strong need for theoretical work on state-selective population cross-sections for CX collisions and ion radiative transition probabilities.