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The X-ray Sun

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The X-ray emission of the Sun is one of the main avenues through which we can make progress in our understanding of the physical processes that drive solar activity, heat and accelerate solar coronal plasmas, and influence the interplanetary environment and the Earth itself. The last decade has seen the launch of several space missions carrying X-ray instrumentation, that have helped us to greatly advance our understanding of our star. These missions have also boosted our need of accurate atomic data for the interpretation of the observations. In this talk I will review the main results delivered by X-ray solar missions, and will highlight the challenges that still lie ahead of us and the atomic data we need to face them.