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# Planetary X-Ray Emissions: Similarities and Differences

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With the advent of sophisticated X-ray observatories, viz., Chandra and XMM-Newton, the field of planetary X-ray astronomy is advancing at a faster pace. Several new solar system objects are now know to shine in X-rays at energies generally below 2 keV. Jupiter, Saturn, and Earth, all three magnetized planets, have been observed by Chandra and XMM-Newton. At Jupiter, both auroral and non-auroral disk X-ray emissions have been observed. The first soft X-ray observation of Earth's aurora by Chandra shows that it is highly variable. X-rays have been detected from Saturn's disk, but no convincing evidence of X-ray aurora has been seen. X-rays have also been discovered from Saturn rings. Several comets have been observed in X-rays by Chandra and XMM-Newton. Cometary X-rays are produced due to change exchange of solar wind ions with cold cometary neutrals. Soft X-rays have also been observed from Venus, Mars, Moon, Io, Europa, Io plasma torus, and the heliosphere. The non-auroral X-ray emissions from Jupiter, Saturn, and Earth, and those from sunlit disk of Mars, Venus, and Moon are produced due to scattering and fluorescence of solar X-rays. The spectral characteristics of X-ray emission from comets, heliosphere, geocorona (darkside of Moon), and Martian halo are quite similar, but they appear to be quite different from those of Jovian auroral X-rays. The X-ray aurora on Earth is generated by electron bremsstrahlung and on Jupiter by precipitation of highly-ionized energetic heavy ions. In this paper we will present a comparative overview of X-ray emission from different solar system bodies and discuss their source mechanism.