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Poster
We present a statistical study of the X-ray emissions emanating from Jupiter's disk region using 19 years of observations from the Chandra X-Ray Observatory (CXO). Previous work has suggested that these emissions are consistent with solar X-rays elastically scattered from the planet's upper atmosphere, and that the Jovian disk emission is governed by solar activity. We showcase a new Pulse Invariant (PI) filtering method which was found to minimise the background and ensures consistency across the nearly-two-decade span of the observations, accounting for Chandra instrument degradation over this period of time. This filtering method ensures that any trends in photon counts have a real physical origin as opposed to an instrumental effect. We compare the CXO results with data from the GOES X-ray Sensor (XRS) in order to quantify the connection between the solar activity cycle and the count rates observed from Jupiter's disk. The high spatial resolution of the High Resolution Camera Instrument (HRC-I) on board the CXO also allows us to map the disk photons to their specific positions on Jupiter's surface. As a result, Voronoi tessellation diagrams were constructed to identify any spatial preference of equatorial photons.
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