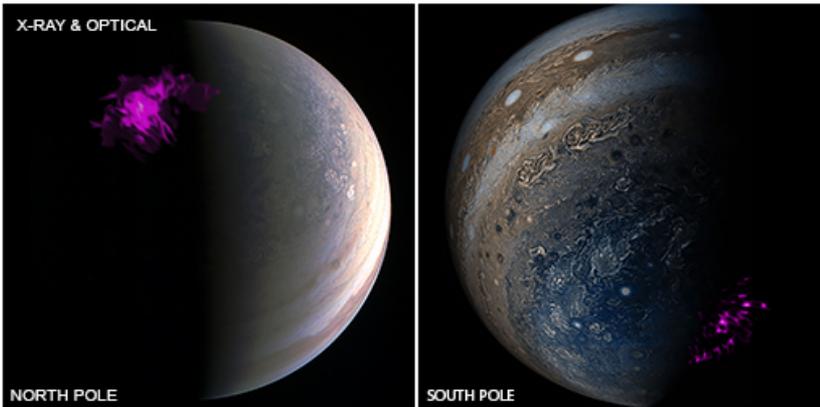




Chandra Science Highlight

Independent Pulsations of Jupiter's Northern and Southern Auroras



X-ray data from Chandra (purple) are superimposed on optical images from NASA's Juno spacecraft of the northern and southern polar regions of Jupiter.

Distance estimate: 793 million km, on the date of Chandra HRC observations

Image scale: The image is 37 arcsec across

Instrument: HRC

- The X-ray emission from both regions is concentrated in hot spots near the poles and is produced primarily by highly-ionized energetic oxygen, sulfur, and carbon ions moving downward along Jupiter's magnetic field.
- Combined Chandra and XMM-Newton observations show that Jupiter's northern and southern hot spots exhibit different characteristics, such as different periodic pulsations and uncorrelated changes in brightness.
- These observations imply highly-energetic independent processes are driving the X-ray emission from Jupiter's poles, contrary to current models, and unlike the behavior of Earth's auroras.

Credits: X-ray: NASA/CXC/UCL/W. Dunn et al.;
Optical South Pole: NASA/JPL-Caltech/SwRI/MSSS/G. Eichstadt/S. Doran;
Optical North Pole: NASA/JPL-Caltech/SwRI/MSSS

Reference: W. Dunn. et al. 2017 Nature Astronomy 1, 758

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