Polar "hot spots" are caused by Birkeland currents

The now accepted theory of sun-Earth Birkeland currents, what astro-physicists call "magnetic ropes" or "flux ropes",\(^1\) provides a mechanism to explain polar "hot spots" on planets throughout the solar system.

CHANDRA x-ray data of Jupiter from 2000,\(^2\) the Cassini image of Titan in infrared from 2009,\(^3\) and Keck Observatory's temperature data from Saturn in 2004,\(^4\) all show increased energy in "hot spots" at the pole. Birkeland currents entering planets through the poles (that power planetary magnetic fields) is a mechanism that fits with the data.

![Images of planetary phenomena](https://example.com/planetary_images)

The only other possible explanation is the theory of polar holes, with energy radiating from the planet core.

Synapses

1. Magnetic Rope observed for the first time between Saturn and the Sun - UCL
2. Jupiter Hot Spot Makes Trouble For Theory - CHANDRA
4. Reflection of Sunlight off Titan Lake - NASA