

## Auroral signatures of reconnection at Saturn: comparison with Earth

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## Abstract

The quasi-continuous main UV emission at Saturn similarly to Earth is suggested to be produced by the magnetosphere-solar wind interaction, through the shear in rotational flow across the open closed field line boundary. Intensification of the prenoon auroral emission is suggested to be related to low-latitude reconnection, while spot-like emissions extended poleward of the main auroral emission are associated with lobe reconnection. Recently, Cassini's Ultraviolet Imaging Spectrograph (UVIS) revealed the presence of bifurcations of the main dayside auroral emission, arc-like emissions with one edge connected to the main emission and the other one bending towards the pole. They are interpreted as signatures of consecutive reconnection events at Saturn's magnetopause.

This study compares the auroral signatures of magnetopause reconnection at Saturn with those at Earth. Additionally, we report on new features at Saturn's polar aurora: polar oval-aligned auroral arcs and transient spots, which are disconnected from the main emission. We study their properties such as timescales, location and motion, based on Cassini UVIS data. Finally, we compare the auroral arcs at Saturn with those in the terrestrial aurora and we examine their relation to magnetic reconnection and their significance in magnetospheric dynamics.