

THE ORIGIN AND SHAPE OF DIFFUSE AURORAL PATCHES

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ABSTRACT: Patchy pulsating aurora occurs commonly in the post-midnight sector. Recent studies have moved us significantly closer to understanding the mechanisms responsible for pitch angle scattering of the CPS electrons that produce these aurora. However, there is not yet an adequate explanation of what physical process gives rise to the patchy nature of the aurora. These patches last for minutes up to tens of minutes, with sizes that do not change significantly over their life time, and remain more or less stationary relative to the ground. In this paper, we use THEMIS and NORSTAR ASI observations of these auroral features to explore the shape of these patches. Based on our results, we conclude that the patches are the ionospheric counterpart of structures in cold plasma near the magnetospheric equator.