

Detached cusp aurora for southward IMF

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A poleward-moving aurora is a typical phenomenon in the dayside cusp of the high-latitude ionosphere. This aurora usually originates near the equatorward boundary of the cusp, and diminishes near the poleward boundary of the persistent cusp auroral emissions. In this study we have examined faint poleward-moving auroras that are detached from the persistent cusp emissions by analyzing 630-nm aurora image data from an all-sky imager at Longyearbyen, Svalbard, and precipitating electron data from DMSP spacecraft. These auroras occur for southward IMF, and are located at latitudes higher than 80 MLAT. The intensities are very weak (less than 1 kilo Rayleigh). The result of the analysis shows that the speed of the auroral motion is 1 to 2 km/s, which is faster than typical convection speed in the dayside polar cap. We show the similarities and differences between the faint aurora and the typical poleward moving cusp aurora, and discuss how soft electron precipitation occurs in the region that is well separated from the cusp.

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