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A 会場 ：11/25　PM2 （15:30-18:15）
15:30〜15:45

ヌルーセパレーター構造に基づくテーターオーロラの説明

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Interpretation of the Theta Aurora Based on the Null-Separator Structure

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The theta aurora is reproduced by global simulation. First, we construct a solution for the stationary northward interplanetary magnetic field (IMF) forming the separatrices, the separators, the nulls, and the stemlines. From the drawing of last-closed field lines, the overall structure under this condition is summarized as the northern lobe is generated by a separatrix emanating from the southern null. In this paper, all variations are antisymmetric in the southern hemisphere. Afterward, the IMF By is switched to reproduce the theta aurora. The ionospheric theta aurora is reproduced as closed magnetic field regions. The polar cap is divided to old and new parts, by the theta bar. In the magnetosphere, two dayside nulls occur corresponding to the new IMF and two nulls corresponding to the old IMF retreat tailward. The four nulls form a structure connected by four separators, constructing the magnetospheric topology corresponding to the theta aurora. In this topology, old and new nulls in the southern hemisphere generate old and new lobes in the northern hemisphere. Each lobe is projected onto northern old and new polar caps. The origin of the theta bar is the stagnating closed magnetic field region that occurs between old and new lobes. Separator reconnection occurs between the old lobe in the southern and the new lobe in the northern hemispheres, reducing southern old polar caps. This is the cause of the movement of the theta bar. The theta aurora is the phenomenon that demonstrates the existence of the null-separator structure.