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## Relation between formation of plasmaspheric shoulders and overshielding at inner magnetosphere

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The IMAGE mission first gave us global images and revealed time variations of plasmasphere by detecting resonantly scattered radiation of thermal He<sup>+</sup> at 30.4 nm. New plasmaspheric density structures have been revealed. New terms, like shoulders, channels, fingers, and crenulations, have been given to those structures. Goldstein et al. (2002) suggested that shoulders were caused by overshielding electric field. The electric field was triggered by ring current and sudden strong northward turning of the IMF. Large geomagnetic storms are likely to cause the formation of the shoulder. However, we identified shoulders under the quiet geomagnetic condition. In this paper, we report the plausible scenario responsible for the origin and formation of plasmaspheric shoulders.

Keywords: plasmasphere, shoulder, overshielding