



Are there auroral signatures related to asymmetric generation of field-aligned currents in the tail due to an IMF By induced twist?

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It is well known that the IMF influences the Earth's magnetic field. For the case of a dawn-dusk component in the IMF, the magnetic pressure in the lobes will experience a dawn-dusk asymmetry being oppositely directed in the two hemispheres. These asymmetric magnetic pressure distributions forced by the IMF will affect also closed field-lines, and the result is an added By-component in the closed magnetosphere in the same direction as the IMF By. This is known in the literature as IMF By penetration and has frequently been suggested to be responsible for observed differences in the nightside auroral brightness during By dominated IMF. However, a detailed description of how the asymmetric stresses in the tail can propagate to the ionosphere(s) and eventually affect the aurora is presently lacking. Also, the earlier statistical studies indicating this IMF By influence on the global aurora have focused on only one hemisphere. Therefore, the precise mechanism and extent of the IMF By influence on the global aurora in both hemispheres are not fully understood. We present a statistical analysis of the nightside auroral brightness from both hemispheres during carefully selected IMF By dominated events using the FUV-WIC camera on-board the IMAGE spacecraft. Performing the same analysis in both hemispheres with the same camera will provide further insight to these questions. This will help us determine if the stress in the tail imposed by IMF By can affect the Northern and Southern ionospheres differently. If so, these results would be important for understanding the mechanism for asymmetric stress propagation from the tail to the ionospheres.