



Asseleration of ions in turbulent electromagnetic field during dipolarization events

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In spite of the long time interest for the acceleration of high energetic ions in the Earth's magnetotail, considerable uncertainty remains as to the quantitative influence of different acceleration mechanism and their modifications. Both theoretical and numerical studies predict a hardening of the energy spectra of the particles wandering into the current sheet.

Such energetic ion fluxes in the near-Earth tail were usually observed during magnetic dipolarizations or presence of turbulent electromagnetic field in the central region of current sheet that can effectively interact with the charged particles and energize them.

The results demonstrate particle acceleration by separate two mechanisms and by their joint action. Both acceleration mechanisms lead to the formation of powered tails in proton distribution functions. Generally acceleration on magnetic dipolarization can be more effective in comparison with turbulent electromagnetic field.