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Time Scales of Hard X-ray Emission of Large Proton Flares

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Abstract content

The hard X-ray (>150 keV, ACS SPI) emission during the X-class solar flares of 2006 December 5 and 6 lasted about 5 and 15 min respectively and the time profiles show several distinct peaks of about 1-2 min. If the time-profiles are plotted relatively the onset of 15.4 GHz radio emission, then the hard X-ray emission of the December 6 event would be delayed by 4 minutes in comparison with the December 5 event, so peaks of the two events are not overlapped. From the first look the flash-phase of these flares is formed by several acts of energy release, which differ by features of the soft (1-8 Å, GOES) and hard X-ray ranges, as well as at radio frequencies from 245 MHz to 15.4 GHz. Comparison with the hard X-ray time profile of the 2003 October 28 event shows that the emission of the December 5 event corresponds to the A and B phases defined by Kiener et al. (2006), but to the C phase in a case of the December 6. The dominant hard X-ray emission during the C phase also has been observed in the solar flare of 2005 September 7 and might be considered as a feature of effective proton acceleration. These observations would be discussed in order to understand processes of solar proton acceleration and release into the interplanetary space.

If this papers is presented for a collaboration, please specify the collaboration

Summary

Reference

Proceedings of the 30th International Cosmic Ray Conference; Rogelio Caballero, Juan Carlos D'Olivo, Gustavo Medina-Tanco, Lukas Nellen, Federico A. Sánchez, José F. Valdés-Galicia (eds.); Universidad Nacional Autónoma de México, Mexico City, Mexico, 2008; Vol. 1 (SH), pages 7-10

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