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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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