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CORONAS-F SATELLITE DATA ON THE DELAY BETWEEN THE PROTON ACCELERATION ON THE SUN AND THEIR DETECTION AT 1 AU.

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Abstract content

The SONG instrument onboard the CORONAS-F satellite detected solar flare gamma-ray emission in the energy range 50 keV – 300 MeV. Study of the fluxes and spectra obtained during several major flares shows presence of the gamma-ray emission at the energy > 40 MeV with the characteristic spectrum feature generated by neutral pion decay. This feature proves unambiguously that protons were accelerated in the flare volume to energies at least 300 MeV. We determined the onset time of the pion decay equal to 11:04 UT for 28 October 2003 and to 6:45 UT for 20 January 2005 with uncertainty about 30 s. High-energy protons were detected near the Earth in particular by the SONG instrument. Comparison of the proton acceleration time with the time of their observation at 1 AU carried out for these events with certain assumption on the protons path length leads to the conclusion that these protons escaped from the Sun almost instantly after their acceleration.

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 121-124

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