

INFERENCE OF THE HARD X-RAY SOURCE DIMENSIONS IN THE 1972, AUGUST 7 WHITE LIGHT FLARE

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Summary*. Broadband photographs and spectra of the white light flare of 1972, August 7 have been compared with hard X-ray spectra from the same event. There is a very close temporal correspondence between the hard X-ray and white light emission curves, and these emissions come from layers that are separated by a height of less than 2000 km. The flare shows at least two distinct particle acceleration phases: the first, occurring at a stationary source, gave very bluish continuum emission from 4 bright stationary knots while the X-ray ($E > 60$ keV) spectrum hardened and reached peak intensity. This phase occurred between 1520 and 1523 UT. In the second phase (1524–1537 UT) the bright knots dissolved and a faint wave moved out from the flare center at 40 km s^{-1} . The spectrum of the wave was nearly flat in the range 4950–5900 Å and analysis of the spectrum indicates that the emission was probably due to heating and ionization by 20–100 keV electrons. The X-ray spectrum, as derived from Interkosmos 7 and ESRO TD-1A satellite data, becomes softer during the wave phase. The close correspondence between the X-ray and continuum emission events shows that, in effect, the hard X-ray source has been resolved. It consists of several changing patches approximately $3'' \times 5''$ in area, consistent with the upper limit of $1'$ from balloon observations (Takakura *et al.*, 1971).

References

Takakura, T., Ohki, K., Shibuya, N., Fuji, M., Matsuoka, M., Miyamoto, S., Nishimura, J., Oda, M., Ogawara, Y., and Ota, S.: 1971, *Solar Phys.* **16**, 454.

* For the full text of the paper see *Solar Phys.* **40** (1975), 141.