

**POSITRON ANNIHILATION RADIATION AND >10 MEV GAMMA-RAYS
FROM THE 1997 NOVEMBER 6 FLARE**

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We study a Yohkoh hard X- and gamma-ray spectra of a X9.4/3B flare at 11:52 UT on November 6, 1997. The Yohkoh hard X-ray spectrometer observed the positron annihilation radiation at 511 keV after the peak phase of the flare but did not detect the three gamma-ray continuum from positronium formation. The line fluence was 63 ± 13 photons/cm² and the line width (FWHM) was <14 keV. The Yohkoh observation places restrictions on the temperature and density at the positron annihilation site. We derive the temperature of <1.6 MK and the ambient density of $>10^{14}$ cm⁻³. The Yohkoh gamma-ray spectrometer measured high-energy photons of 10 –100 MeV in the peak phase. The flare spectrum exhibits a mixture of primary electron bremsstrahlung and broad-band gamma-rays resulting from the decay of neutral pions. It implies that protons were efficiently accelerated to > a few hundreds of MeV and streamed down to the chromosphere. We discuss high-energy particle acceleration based on the Yohkoh and SEP data.