HIGH-ENERGY PARTICLE PRODUCTION IN THE 1997 NOVEMBER 6 FLARE AS VIEWED FROM GAMMA RAYS AND NEUTRONS

M. Yoshimori (1), K. Suga (1), S. Nakayama (1), H. Ogawa (1), G.H. Share (2) and R. J. Murphy (2)
(1) Rikkyo University, (2) Naval Research Laboratory
yosimori@rikkyo.ne.jp / FAX: +81-3-3985-2418

Yohkoh observed hard X- and gamma-rays from a X9.4 flare on November 6, 1997. Strong gamma-rays were emitted in 11:52-11:56 UT (peak phase). After that, weak and extended gamma-ray production lasted for 600s (extended phase). The OSSE aboard CGRO detected neutrons associated with this flare between 12:08 and 12:28 UT. The neutron count-rate time profile exhibit a gradually decrease with time. We derive the proton spectra and the timing of particle acceleration to explain the observed neutron time profile. The proton spectra of E**(-3.5) in the peak phase and of E**(-3.0) in the extended phase give a good fit to the observed neutron time profile. We present detailed calculations of the neutron arrival time profiles and discuss high-energy particle production processes from the gamma-ray neutron observations.