

J43b Isolated Millimeter Flares of Cyg X-3

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Cygnus X-3 (Cyg X-3) is a well-known microquasar with relativistic jets. Its famous giant radio outbursts have been repeated with a few years interval. The giant outbursts are presumably made of a series of flares with a short-time duration. It is difficult to derive physical parameters of the flare itself in the giant outbursts because the successive flares overlap.

We report here isolated flares in the quiescent phase of Cyg X-3 observed at 23, 43, and 86 GHz with the 45-m radio telescope of Nobeyama Radio Observatory in 2006 and 2009. They have small amplitude of 0.5-2 Jy and short duration of 1-2 hr. The millimeter fluxes rapidly increased and exponentially decreased. The life time of the decrease are shorter with higher frequency. The radio spectrum of Cyg X-3 in the flares is flat or inverted spectrum around the peak of flux density. After that, the spectrum gradually become steeper. The observed characteristics are consistent with those of an adiabatic-expanding plasma. The brightness temperature of the plasma at the peak is estimated to be $T_B \gtrsim 1 \times 10^{11}$ K. The magnetic field in the plasma is derived to be $0.2 \lesssim H \lesssim 30$ Gauss.