

SUPERLUMINAL MOTION OF 3C273B AND THE APPARENT RIGHT ASCENSION SHIFT

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ABSTRACT. The effect of the superluminal motion of 3C273b was observed on the fringe amplitudes obtained in VLBI experiments which have been conducted on the baselines between Japan and United States since 1984 under the Crustal Dynamics Project. The speed was 0.7 mas/year and the direction was -83 degrees in the position angle. It was also confirmed as the apparent right ascension shift of the source.

1. Observations

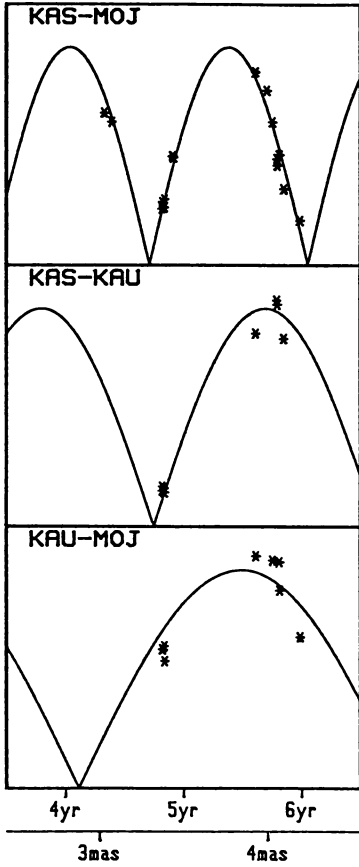
The VLBI observations under the Crustal Dynamics Project have been made since 1984 with stations in Japan and United States, Kashima station in Japan, Mojave station in California, Gilcreek station in Alaska, and Kauai and Kwajalein stations on the Pacific plate, and many good fringes were obtained at 2 GHz and 8 GHz.

2. Fringe Amplitudes

We made analysis on the fringe amplitudes of 3C273b obtained on the Kashima-Mojave, Kashima-Kauai and Kauai-Mojave baselines at 8 GHz and found large variation of the amplitude which seems like an interferometer response to the superluminal motion of 3C273b. From the best fitted theoretical curve to the observations, we derived the speed of the superluminal motion and the direction as shown in Figure 1. We also got the starting epoch of the evolution of 1979.8 which suggests the Jet knot we detected was C6 named by Unwin et al. [1].

3. Right Ascension Shift

The superluminal motion of the Jet knot towards the West as was observed in the fringe amplitudes may cause the apparent shift of the source position. We derived the position of 3C273b from precise delay observations by making 0552+398 a fixed reference and found the decrease of the right ascension as shown in Figure 2. No declination shift was observed. This supports the results of the amplitude analysis, but we need much more data to derive a firm conclusion.



REFERENCE

[1] Unwin, S.C., et al. 1985, *Ap. J.*, **289**, 109



Figure 1. Observed variation of fringe amplitudes of 3C273b at 8 GHz and the best fitted theoretical curve which assumes that the evolution started in 1979.8 at the speed of 0.70 mas/year to the position angle of -83 degree.

KAS : Kashima in Japan
 MOJ : Mojave in California
 KAU : Kauai in Hawaii Islands



Figure 2. Observed right ascension shift. The decrease in the right ascension and no change in the declination means that the apparent position of 3C273b shifted towards the west. The slope was -0.83 ± 0.57 mas/year.

