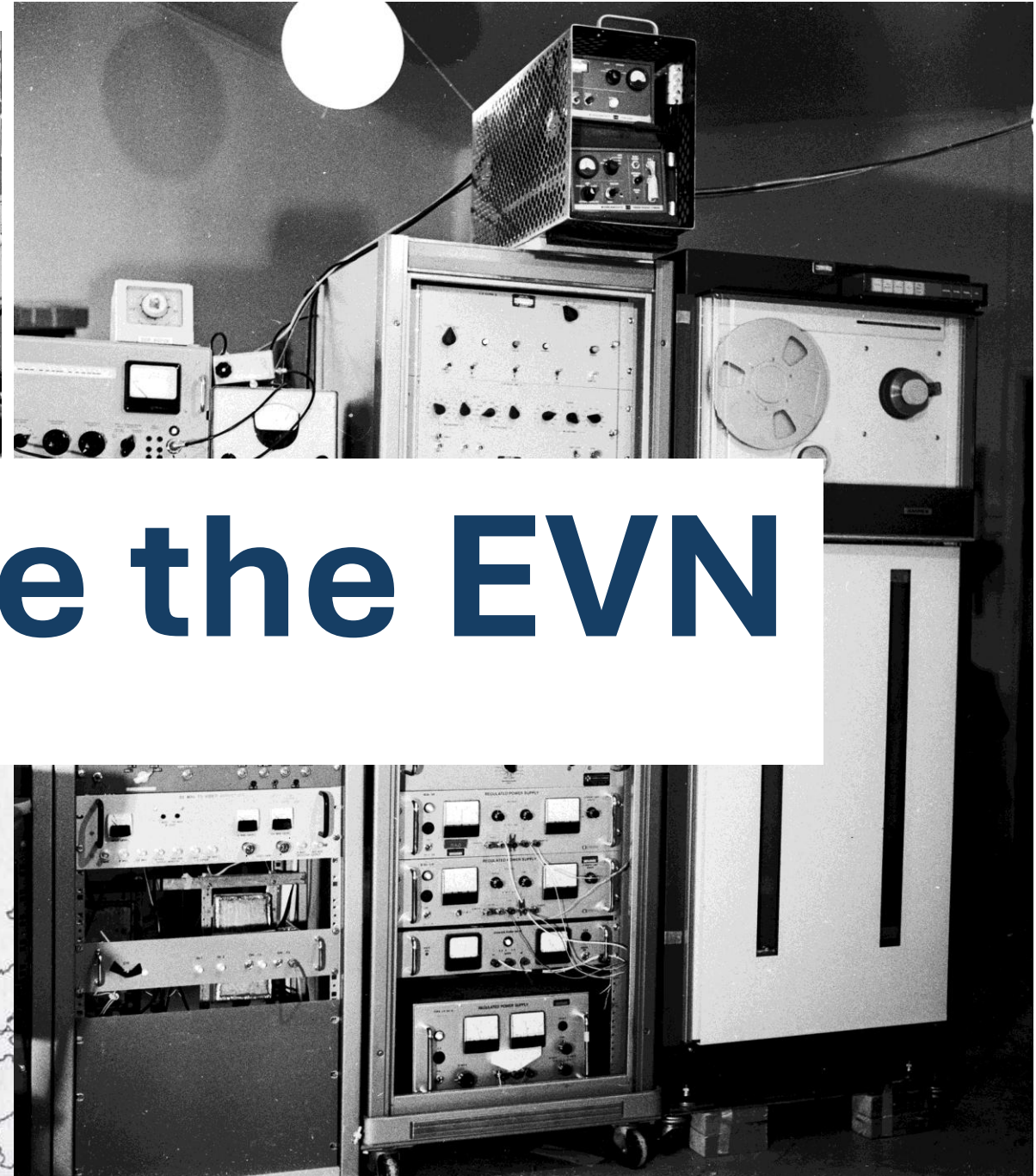




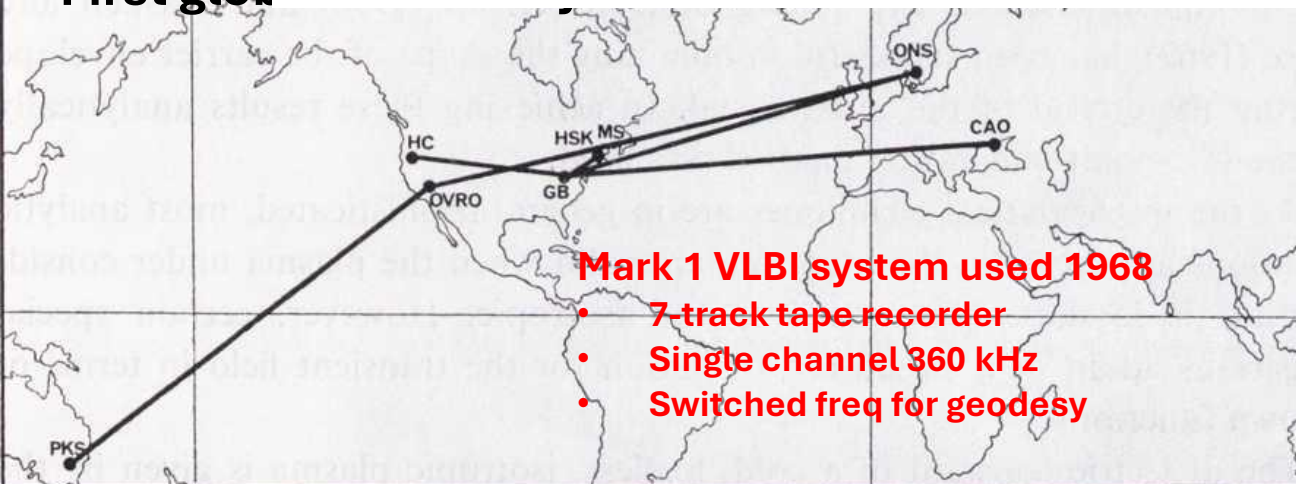
First intercontinental VLBI January 1968



VLBI before the EVN

Lars Baath

First global





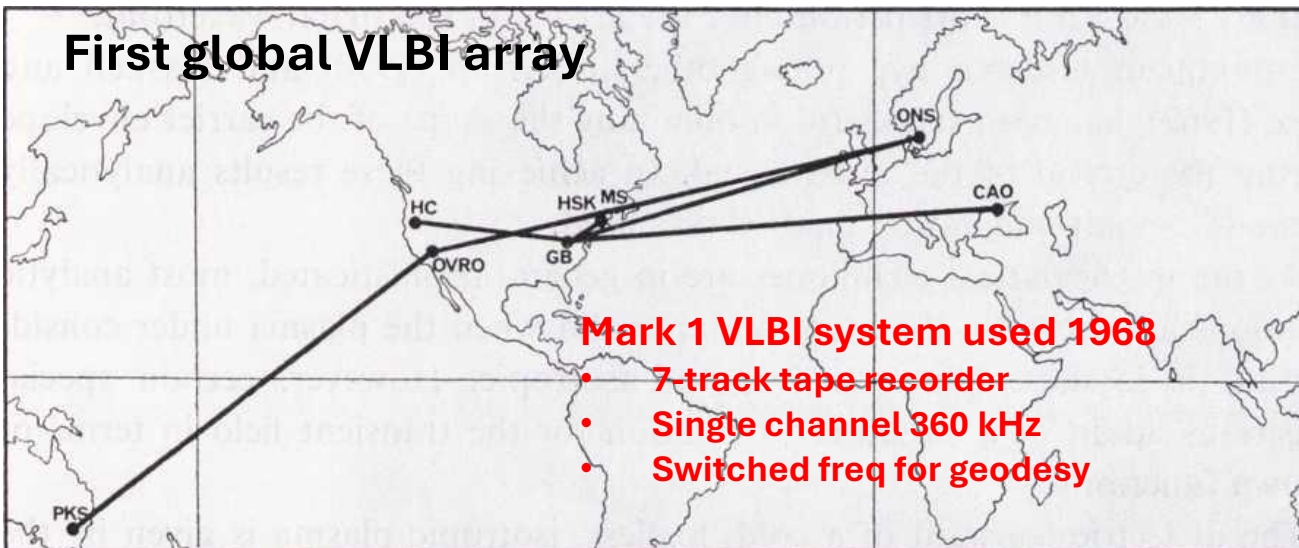
First intercontinental VLBI January 1968



3 mins recording
Then in 12 mins:
Rewind; Remove; Mount tape
Change source; Measure Tsys



First global VLBI array



Mark 1 VLBI system used 1968

- 7-track tape recorder
- Single channel 360 kHz
- Switched freq for geodesy

In April 1968, a historic event took place involving MIT Haystack Observatory radio telescope in Westford, Massachusetts, and its counterpart at [Onsala Space Observatory](#) in Onsala, Sweden: the first transatlantic geodetic very long baseline interferometry (VLBI) observations.

18 cm: - Jan 1968
- Apr 1969
6 cm: - Feb 1968
- Jan 1969
18 cm Geo: - Apr 1968

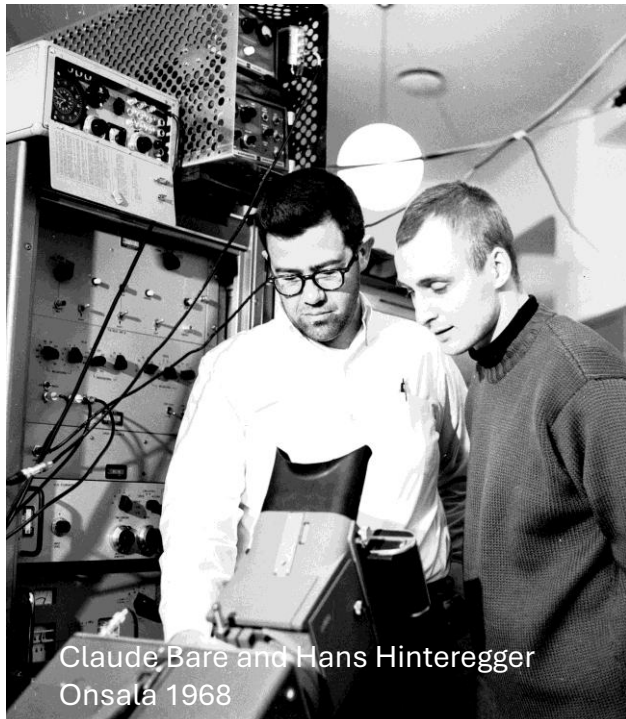
First Four-Element VLBI Array (Jan. 1968)

Onsala
Millstone Hill
Hat Creek
Green Bank

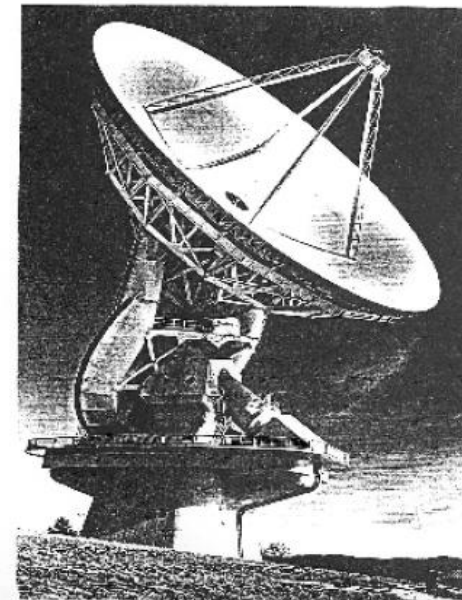
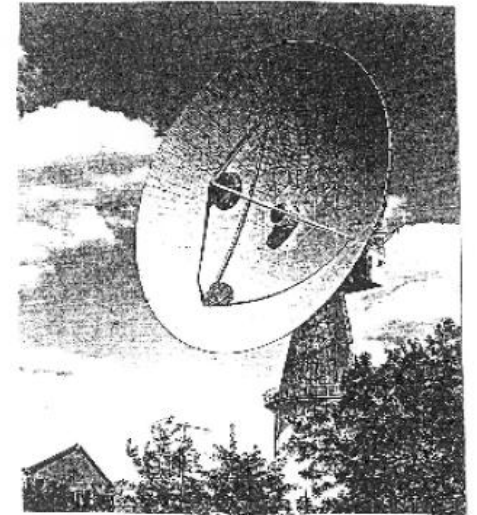
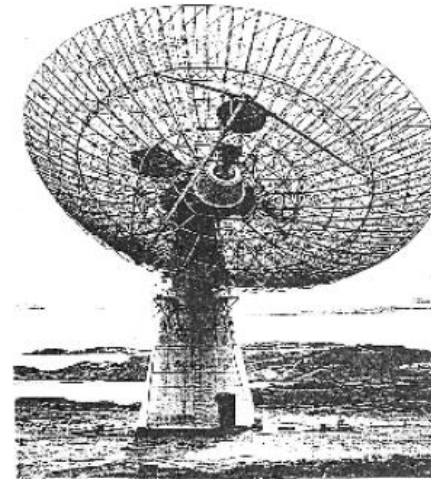
Cosmic Masers

by
Jim Moran
Harvard-Smithsonian Center for Astrophysics

The Golden Years of Radio Astronomy
IAU General Assembly, Honolulu
August 5, 2015



Claude Bare and Hans Hinteregger
Onsala 1968





1969 spectral line Mk I VLBI

Very long baseline interferometry of galactic OH sources

B. O. Rönäng and O. E. H. Rydbeck

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J. M. Moran

Massachusetts Institute of Technology, Lincoln Laboratory, Lexington, Massachusetts 02173

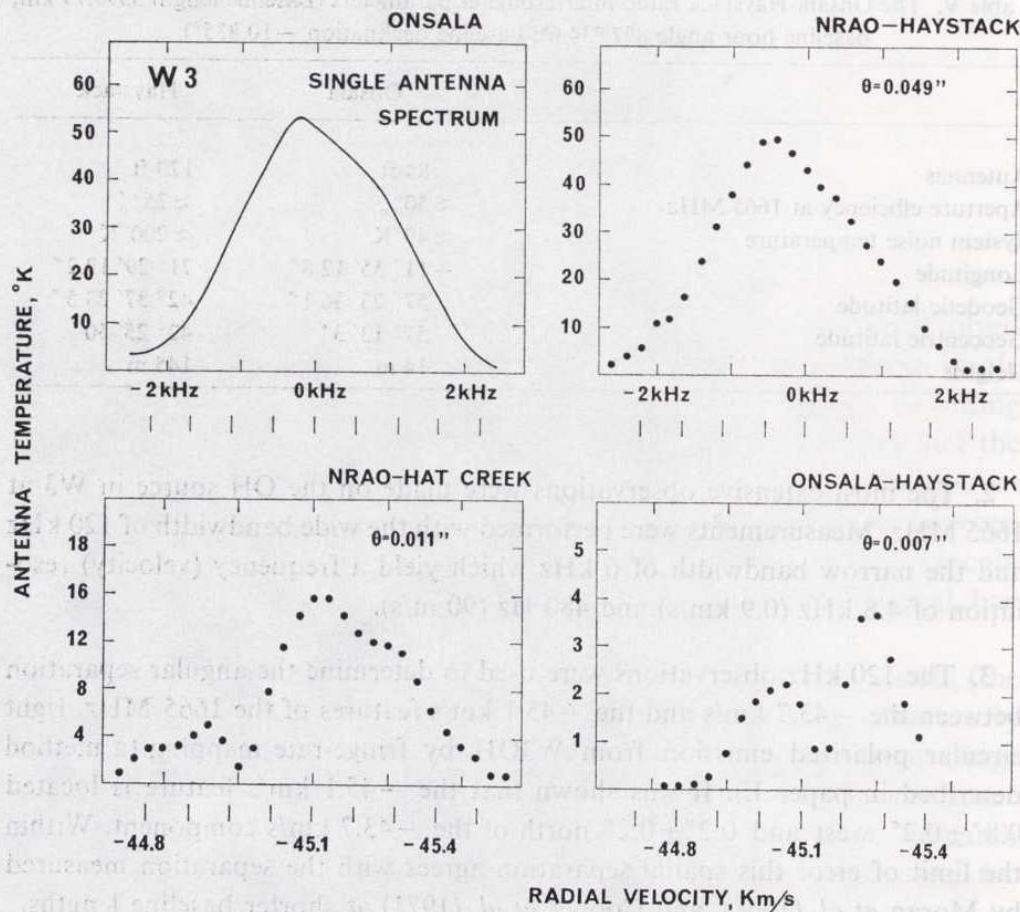


Fig. 3. An example of the high resolution spectra obtained on the -45.1 km/s right circularly polarized feature of W3(OH) at 1665 MHz for different baselines up to a length of 31×10^6 wavelengths (fringe spacing 0.007 arc sec). The integration time is 160 seconds (1800 seconds for the total power spectrum). The frequency resolution is 480 Hz (250 Hz for the total power spectrum).

Multi-epoch 1971-74 Mk I VLBI

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Time-dependent radio fine structure of the quasar 3C 345

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(Received 16 August 1976)

Very-long-baseline interferometry observations at 3.8 cm, with left circular polarization, have been used to probe the fine structure of the quasar 3C 345. Sixteen sets of correlated flux densities and three sets of closure phases, obtained from observations made between October 1971 and October 1974 at up to four sites simultaneously, indicate that 3C 345 is composed of two components whose separation was about 1.0 milliarcsec in late 1971, and 1.3 milliarcsec in late 1974. The position angle remained at about $105^\circ \pm 5^\circ$, with the smaller, weaker component being in a direction east and south of the larger, stronger one. The component separation thus increased throughout at an average rate of about (0.09 ± 0.03) milliarcsec/yr corresponding to an apparent velocity of expansion of $(2.5 \pm 0.8)c$ for $z = 0.6$, $H_0 = 60$ km sec $^{-1}$ Mpc $^{-1}$, and $q_0 = 1$. These results seem inconsistent with the "Christmas-tree" model of the time variations of the fine structure of extragalactic radio sources.



Astron. Astrophys. 86, 364–372 (1980)

Time-dependent Radio Fine Structure of the Compact Sources NRAO 150 and 4 C 39.25

L. B. Bååth¹, W. D. Cotton², C. C. Counselman², I. I. Shapiro², J. J. Wittels², H. F. Hinteregger³, C. A. Knight³, A. E. E. Rogers³,
A. R. Whitney³, T. A. Clark⁴, L. K. Hutton⁴, and A. E. Niell⁵

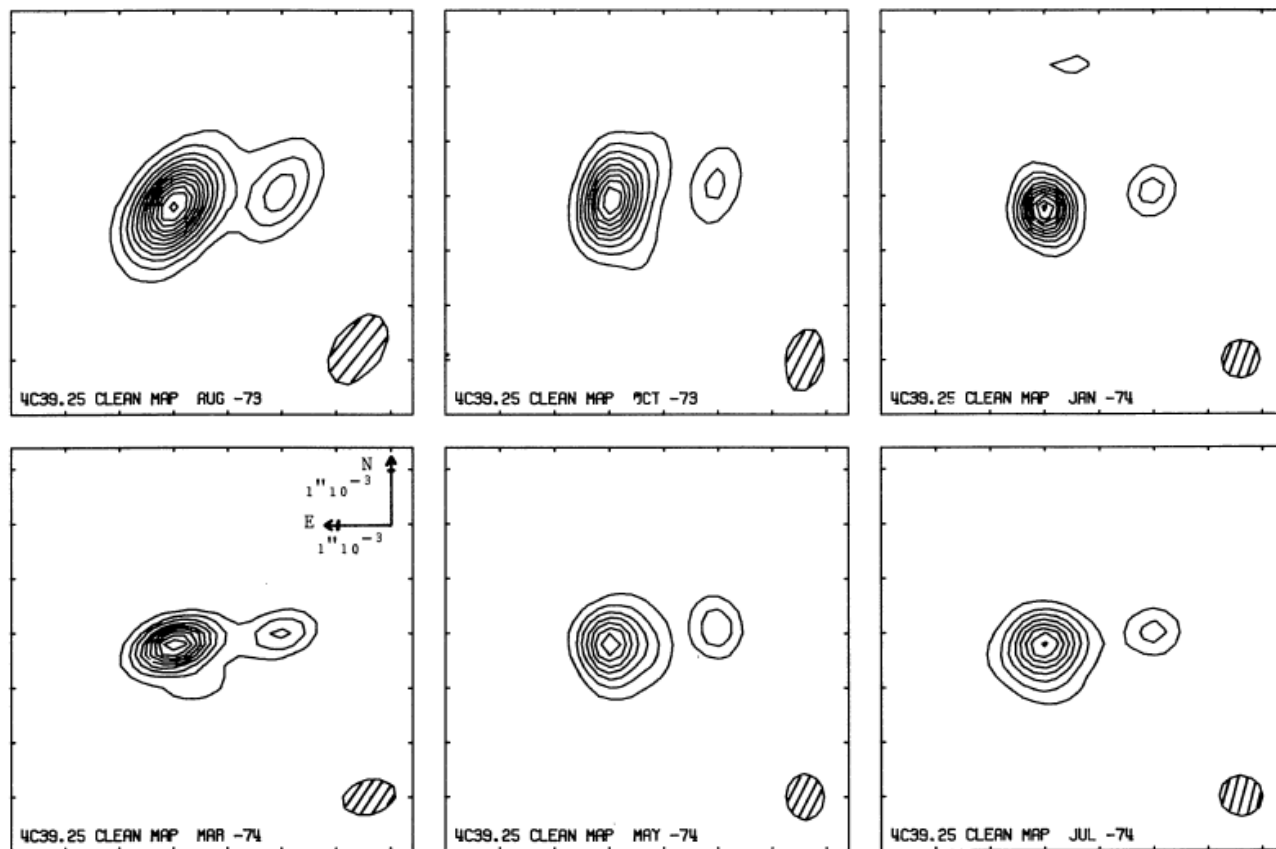


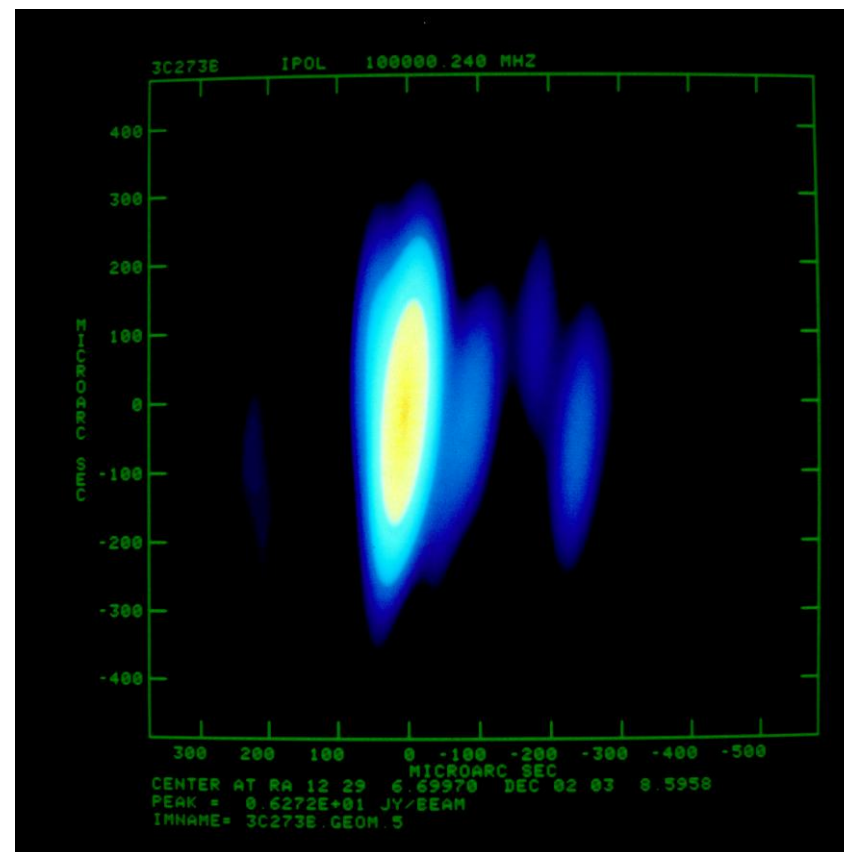
Fig. 7. As in Fig. 3c, except for 4C 39.25. Scale and orientation are as indicated in the March 1974 map

ASTRONOMY AND ASTROPHYSICS

1988 100 GHz global VLBI

The microarcsecond structure of 3C 273 at 3 mm

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R. S. Booth¹, J. E. Carlstrom⁴, R. L. Dickman⁵, D. T. Emerson⁶, H. Hirabayashi⁷, M. W. Hodges², M. Inoue⁷,
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End