

CONTINUED RADIO ACTIVITY FROM CH CYGNI

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ABSTRACT. Following the discovery of the radio outburst and jet formation from CH Cygni in 1984, continued radio monitoring has been carried out with the Very Large Array. We present the preliminary results of these observations, including a high resolution image of the jet in 1986 – 1.5 years after the initial outburst. The star has remained active in the radio, undergoing at least one additional outburst. The radio jet has continued to expand and shows evidence of multiple episodes of ejection along the same axis.

1. INTRODUCTION

Since 1964 CH Cygni has been in an active state, exhibiting a high degree of optical variability and the combination spectrum of late-type continuum and emission lines characteristic of symbiotic stars. In July/August 1984 the optical continuum declined abruptly by more than a magnitude while higher excitation emission lines and very broad Balmer wings appeared (Tomov 1984, Selvelli and Hack 1985). At the same time radio observations revealed an outburst at centimeter wavelengths and the production of a jet of radio emitting gas expanding at a rate of $1.1''/\text{yr}$ (Taylor et al. 1986). In this paper we report on continued radio observations of CH Cygni during 1985 and 1986.

2. OBSERVATIONS AND RESULTS

Observations at frequencies of 1.5, 5 and 15 GHz have been obtained with the National Radio Astronomy Observatory Very Large Array at intervals of about three months. Figure 1 shows the flux densities at these frequencies for the three year period April 1984 to April 1986. The curves delineate at least two distinct outbursts that evolve on a time scale of about 400 days. The time scale and spec-

tral evolution of the outbursts are similar to the radio outbursts of novae. The beginning of a third outburst is suggested by our last observation.

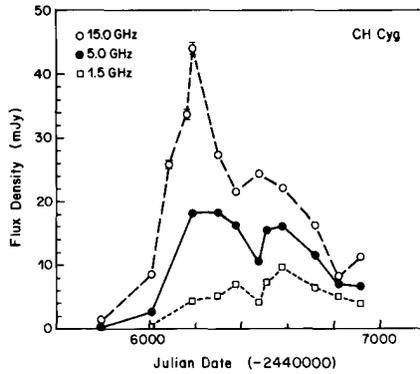


Figure 1. Radio Flux Densities of CH Cygni at three frequencies

In February 1986 the VLA returned to the highest resolution A configuration. The radio image at $\lambda = 2$ cm is shown in figure 2. The total extent of the jet is $1.5''$, roughly consistent with the expansion rate measured in 1984. The jet also shows additional radio components, indicating that a further episode of material ejection has occurred. The spacing of the components suggests an interval of about 200 days between ejection events.

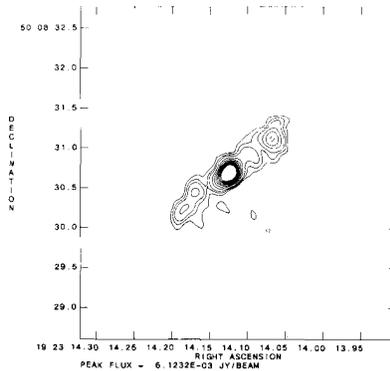


Figure 2. Radio image of CH Cygni from February 1986 at $\lambda = 2$ cm

References

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 Taylor, A.R., Seaquist, E.R. and Mattei, J.A. 1986, *Nature*, **319**, 38.
 Tomov, T. 1984 *Inf. Bull. of Var. Stars*, No. 2610.