

INNER OSCILLATIONS IN THE M87 JET ⁺

J.-L. Nieto (1)
G. Lelièvre (2)
J.-L. Heudier (3)
A. Maury (3)

(1) Observatoire du Pic-du-Midi et de Toulouse, France
(2) CFH Telescope Corporation, U.S.A
(3) Telescope de Schmidt, CERGA, France

Continuing a long project of investigations of the optical morphology of the M87 jet (see review in Nieto, 1983), we have obtained at the Cassegrainian focus of the CFH telescope in March 1983 three UV exposures with the wide-field electronographic camera (Lallemant et al., 1970). The aim was to achieve the same order of resolution as that of the photographic plates obtained by Nieto and Lelièvre (1982), but with a much higher signal to noise ratio.

This last characteristics of these observations allowed the detection of :

- i) a very faint wave at the end of the jet,
- ii) oscillations in the inner jet,
- iii) a continuous component between the inner complexes,
- iv) a faint jet-like nuclear extension elongated along the jet ($\sim 1''$) and bent southwards. This curvature is curiously similar to that found by the VLBI observations (Reid et al., 1982) at a scale 20 times smaller, suggesting that the VLBI jet and this small optical jet are the same feature.

This is evidence for wiggles starting right at the nucleus and continuing for a few hundreds of parsecs in the inner jet, supporting the hypothesis of a precessing nucleus. If we assume that the regular spacing of the inner knots found by Nieto and Lelièvre (1982) and confirmed by Biretta et al. (1983) is related to the precession of the nucleus, we derive, for an ejection velocity on the sky plane $\beta \sim 0.02-0.1$, a period of precession $P = 5 \times 10^3 - 2 \times 10^4$ years.

A more detailed description of the M87 and the 3C 273 jets (from data in U, B, V obtained in the same conditions), as well as a comparison of the two jets is presented in submitted papers (Lelièvre et al., 1983 a and b).

+ Discussion on page 437

147

R. Fanti et al. (eds.), *VLBI and Compact Radio Sources, 147-148.*
© 1984 by the IAU.

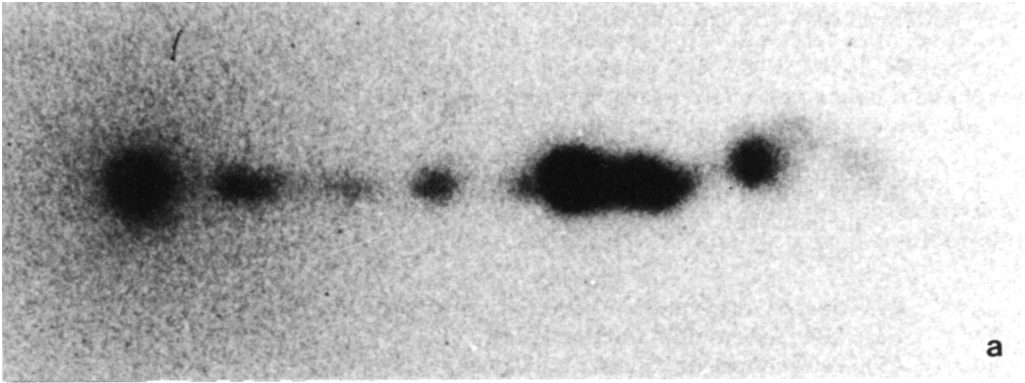


Figure : (a) 10 mn UV exposure of the M87 jet
 (b) 30 mn UV exposure after an image treatment showing the small inner jet (arrow).

REFERENCES :

- Biretta, J.A., Owen, F.N., Hardee, P.E., 1983, *Astrophys. J.*, in press
 Lallemand, A., Renard, L., Servan, B., 1970, *Comptes rendus Acad. Sci.*,
 270, pp. 385
 Lelièvre, G., Nieto, J.-L., Wlérick, G., Servan, B., Renard, L., Horville,
 D., 1983 a, in press
 Lelièvre, G., Nieto, J.-L., Horville, D., Renard, L., Servan, B., 1983 b,
 submitted
 Nieto, J.-L., 1983, *Torino workshop on extragalactic jets*, Ferrari, A.,
 and Pacholczyk, A.G. ed., Reidel : Dordrecht, p. 113.
 Nieto, J.-L., Lelièvre, G., 1982, *Astron. Astrophys.*, 109, pp. 95
 Reid, M.J., Schmitt, J.H.M.M., Owen, F.N., Booth, R.S., Wilkinson, P.N.,
 Shaffer, D.B., Johnston, K.J., Hardee, P.E., 1982, *Astrophys. J.*,
 263, pp. 615