*IAU Colloquium 164: Radio Emission from Galactic and Extragalactic Compact Sources*
*ASP Conference Series, Vol. 144, 1998*
*J. A. Zensus, G. B. Taylor, & J. M. Wrobel (eds.)*

# VLBA Observations of 3C 120

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**Abstract.** We present 1.3 cm and 7 mm VLBA observations of the radio galaxy 3C 120 at epochs November 11 and December 22, 1996. The 7 mm maps, with linear resolution of ~0.1 pc, show a very rich structure consisting of up to eight superluminal (~ 7 c) components.

The nearby ($z$=0.033) radio galaxy 3C 120 shows a core and gently curving jet with structural changes (5 GHz observations by Walker, Benson, & Unwin 1987). We performed 22 and 43 GHz simultaneous polarimetry VLBA observations of 3C 120 (see Fig. 1 for epochs November 11 and December 22, 1996). With only about one month separation between the two epochs, a significant variation in the source structure is clearly visible. The linear resolution at 7 mm is ~0.1 pc, one of the highest achieved to date. We distinguish up to eight different moving components (labeled $A$ to $H$) in the maps at 7 mm, with proper motions of the order of 3 mas/yr (except components $F$ and $G$), giving superluminal motions of about 7 c ($H_0$=65 km s$^{-1}$ Mpc$^{-1}$).

Comparing the most recently ejected component $H$ with the rest of the moving features, and assuming a similar flux density evolution for them, we deduce a rapidly decreasing emission in the first stages of the evolution of the components, later reaching a slower decay. Another possibility is that component $H$ represents a stronger event in the source activity. Components $F$ and $G$ move significantly slower than the rest of components, indicating a different nature. Following the predictions of our numerical simulations (Gómez et al. 1997; see also these Proceedings, p. 49), $F$ and $G$ may be the result of the interaction of a strong component ($E$) with recollimation shocks in the underlying jet. In that case $F$ and $G$ should progressively fade and decelerate. Depending on the relative strength of the interacting shocks, the dragged components might even show a brief backward motion before finally fading (see the animated simulations at http://www.iaa.es/~jlgomez/jets.html). This is most probably observed in the inner portion of the jet, and may be revealed by upcoming CMVA 3 mm observations. The polarimetry information should also reveal more information on the nature of the multiple components. However a careful flux and proper motion monitoring program is essential for a full interpretation.

**Acknowledgments.** This research is supported in part by the Spanish DGICYT (PB94-1275, PB94-0973) and by NATO grant SA.5-2-05(CRG.961 228). J. L. Gómez and J. Mª. Martí gratefully acknowledge return grants from the Spanish Ministry of Education. The National Radio Astronomy Observatory is a facility of the National Science Foundation, operated under a cooperative agreement by Associated Universities, Inc.

## References

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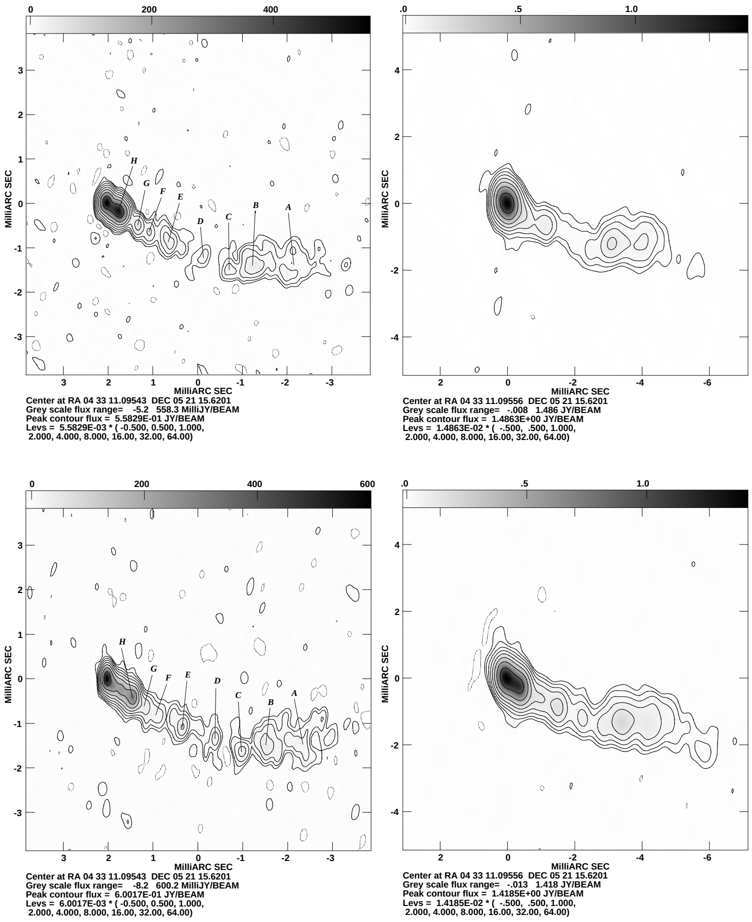


**Figure 1.** Total intensity radio maps of 3C 120 at epochs November 11, 1996 (top images) and December 22, 1996. Left column maps correspond to 7 mm wavelength observation, whereas right column maps are for 1.3 cm.