3C 120. PROPERTIES OF 4 CONDENSATIONS NEIGHBOURING THE NUCLEUS AND EMITTING IN THE CONTINUUM

A. Soubeyran, G. Wlérick, G. Lelièvre, B. Servan, L. Renard,
D. Horville, Observatoire de Paris-75014 PARIS, France
A. Bijaoui, Observatoire de Nice, B.P. 139-06003 NICE CEDEX
P. Bouchet, European Southern Observatory, La Silla, Chili

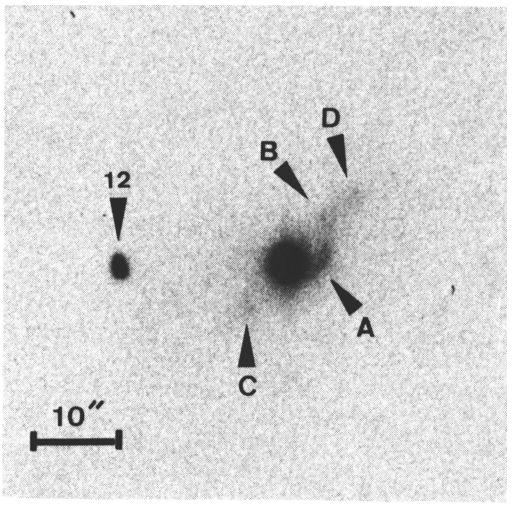

Fig. 1. Electronographic plate of 3C 120. CFH Telescope, colour B, with polarizer (AP = 90°), 70 min exposure, Nov 10, 1983.

Electronographic plates have been obtained with the ESO 3,6 m telescope and the CFH telescope. One of the plates is reproduced figure 1. We have studied the regions surrounding the nucleus of 3C 120 ($r < 8''$) and emitting in the continuum. The "jet" found by Wlérick et al. (1981) has been resolved into 3 condensations, A, B and D ; another condensation C is located 7" S-E of the nucleus ; a filament F leaves the nucleus in the direction of condensation B. The 4 condensations have been measured in colours U B V and V', this last band excluding the [OIII] emission lines. We have located each condensation with respect to the zones where gaz emission is observed and particularly two regions that we call E_1 and E_2. We have also located condensation A with respect to the radiojet and we have searched, in B and V colours, for polarization of this condensation. The results are the following :

1. The 4 condensations are faint : $20,0 < B < 20,8$, corresponding to the absolute magnitudes : $-16,1 < M_B < -15,3$, using $H = 60$ km s^{-1} Mpc^{-1}. Colours of condensations A, B and D are similar : $U-B \sim -0,20$; $B-V \sim 0,87$; condensation C is less blue : $U-B \sim 0,30$; $B-V \sim 0,90$.

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2. The brightest condensation A is elongated nearby North-South, its southern part pointing toward S-E (Fig. 1). It is interesting to place A with respect to the radiojet (cf. Browne et al., 1982, Walker et al., 1987). The maximum of A is located 1" North of the first knot of the jet but the southern part of A coincides with this knot. The maximum of the emission region E_1 is located 1" West of the maximum of A, but region E_1 overlaps a large part of A. Though no significant polarization has been found for A taken globally, we suggest that the flux of A consists of two parts : in the southern region of A, the flux could be synchrotron radiation corresponding to a spectral index radio-visible $\sim 0,7$; the northern part of A would be a zone of star formation triggered by the impact of the jet on region E_1 ; the situation is very similar to the one found with Minkowski's object (Van Breugel et al., 1985 ; Brodie et al., 1985), concerning the relative position of A and the jet, as well as the variation of polarization of this jet and its change of direction ; on the other hand, A is not as blue as Minkowski's object and this is likely due to the fact that the number of young stars is smaller ; the change of the polarization in a well localized part of the radio knot (Walker et al., 1987) suggests that the gazeous region E_1 is flattened and that the jet crosses it obliquely.

3. Condensations B and D form a chain with A and they are located in a region where no emission is observed ; they are made probably of stars older than the one of condensation A.

4. Brightness and colours of condensation C are similar to those of the nucleus of a spiral galaxy. We suggest that C is the residue of a galaxy captured by 3C 120 ; this agrees with the work of Heckman et al. (1986) ; these authors consider a galaxy merger as the origin of the activity of 3C 120 and, as they do not see any neighbouring galaxy, they state that the merger has nearly reached completion. The bright gazeous region E_2 connects possibly C and the nucleus of 3C 120.

Spectroscopic observations with a spatial resolution better than those of Baldwin et al. (1980) could permit to measure the relative velocities of A and different part of E_1 and to see if E_2 connects C and the nucleus. Observations with the Space Telescope would permit to know if A is connected to the nucleus and if this connection follows the radiojet.

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