28 Sherr, C. J., and Todaro, G. J., *Proc. natn. Acad. Sci. U.S.A.*, **71**, 4703 (1974).
29 Sherr, C. J., and Todaro, G. J., *Science*, **197**, 855 (1975).
30 Strand, M., and August, J. T., *J. Virol.*, **14**, 1584 (1974).
31 Baxt, W., *Proc. natn. Acad. Sci. U.S.A.*, **71**, 2835 (1974).
32 Larson, C. J., *et al.*, *Proc. natn. Acad. Sci. U.S.A.*, **72**, 4900 (1975).
33 Prochownik, E. V., and Kirsten, W. H., *Nature*, **260**, 64 (1976).
34 Aoki, T., Walling, M. J., Bushar, G. S., Liu, M., and Hsu, K. C., *Proc. natn. Acad. Sci. U.S.A.* (in the press).
35 Metzgar, R. S., Mohanakumar, T., and Bolognesi, D. P., *J. exp. Med.*, **143**, 47–63 (1976).
36 Gillespie, D., and Gallo, R. C., *VII Int. Symp. Comparative Research on Leukemia and Related Diseases* (S. Karger, New York, in the press).

# letters to nature

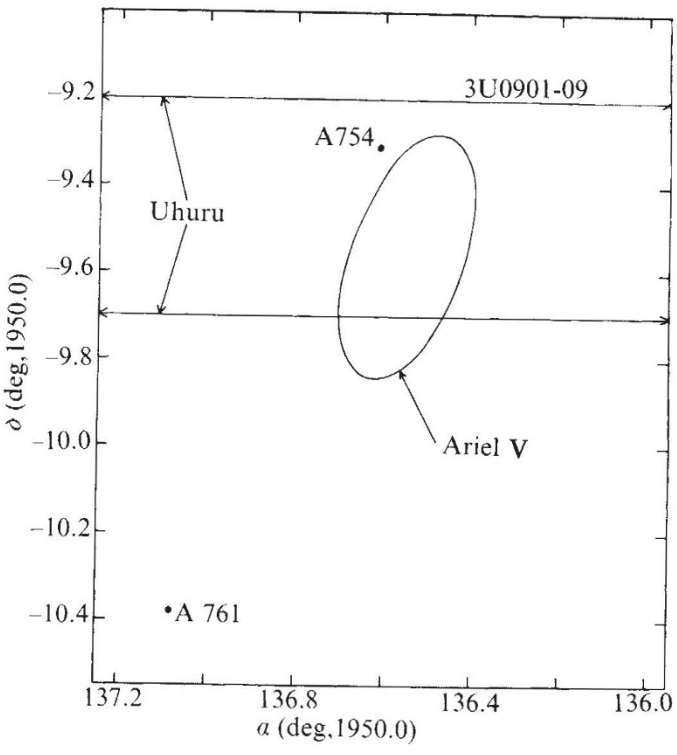
## Identification of Abell Cluster 754 with the X-ray source 3U0901 – 09 by Ariel V

THE faint, high galactic latitude X-ray source 3U0901−09 (ref. 1) has been previously associated[2], on positional grounds, with the rich cluster of galaxies, Abell 754 (distance class 3, richness class 2)[3]. Since the Uhuru 90%-confidence positional error box for 3U0901−09 is relatively large, having an area of 2.6 degree$^2$, it is worthwhile, in view of current theoretical interest in X-ray emission from clusters of galaxies (see, for example, ref. 8), to reduce the positional uncertainty and thus confirm or reject the proposed identification with A754.

The high energy (2–18 keV) detector system of the Ariel V X-ray sky survey instrument (SSI) has observed 3U0901–09 on a number of separate occasions over a period of a year (February 1975–February 1976) and the results are reported here. The SSI and data analysis are described elsewhere[4–6].

The SSI measured a statistically significant signal ($> 3\sigma$) from the vicinity of 3U0901–09 for nine sets of observations. The individual error boxes ('lines of position') from each set of SSI observations are combined to produce the Ariel V Sky survey 90%-confidence probability contour for the source location, shown in Fig. 1. This reduces, by over an order of magnitude, the uncertainty in the location of the X-ray source and supports the previous identification[2] of 3U0901–09 with A754. Our 90%-confidence error box has centroid (in celestial coordinates (degrees, 1950.0)) $\alpha = 136.55$, $\delta = -9.56$, and area 0.11 degree$^2$. We have paid particular attention to the possibility that A761 might also be a source of significant X-ray emission; careful examination of the individual observations, however, allows us to reject this possibility.

**Fig. 1** 90%-confidence positional error boxes for the X-ray source 3U0901-09 associated with A754, from Ariel V and Uhuru.




Each observation consisted of a summation of data over a period of 1–3 d. There is no significant intensity variation between the individual measurements (maximum deviation from the mean is $\sim 1\sigma$), and the mean intensity level is $1.9 \pm 0.2$ Ariel V counts s$^{-1}$ (2–18 keV), corresponding to $\sim (9.5 \pm 0.9) \times 10^{-11}$ erg cm$^2$ s$^{-1}$ (2–10 keV) or $5.5 \pm 0.5$ Uhuru counts s$^{-1}$ (2–6 keV), assuming a spectrum like that of the Coma cluster. The uncertainties quoted are from Poisson errors on the count rates only. This is in close agreement with the Uhuru measurement[1,2] of $4.4 \pm 0.8$ Uhuru counts s$^{-1}$. A redshift $z = 0.0537$ for A754 (ref. 7) and a Hubble constant of 55 km s$^{-1}$ Mpc$^{-1}$ give a distance of 293 Mpc, implying, from the Ariel V intensity, an X-ray luminosity of $(9.8 \pm 0.9) \times 10^{44}$ erg s$^{-1}$ (2–10 keV).

It has been suggested that cluster X-ray luminosity can be positively correlated with: (1) cluster richness[9,10]; (2) cluster radio luminosity[8]; (3) the presence of one or more dominant central galaxies (usually optical type *cD* (ref. 11))[9,10]; possible explanations have been discussed in the literature[9,10,12]. Confirmation of A754 as an X-ray source strengthens these apparent correlations, A754 being both a *cD* type cluster[11] and a radio source[8]. Several theoretical studies of possible X-ray emission mechanisms in clusters of galaxies (see those reviewed in ref. 8), have suggested (differing) correlations between cluster X-ray luminosity and velocity dispersion $\Delta v$. It is therefore important to measure $\Delta v$ for A754.

The Ariel V project is supported by the SRC.

J. P. PYE
B. A. COOKE
MARTIN ELVIS

*X-ray Astronomy Group,*
*Department of Physics,*
*University of Leicester,*
*Leicester LE1 7RH, UK*

Received May 6; accepted June 4, 1976.

1 Giacconi, R., *et al.*, *Astrophys. J. Suppl.*, **27**, 37 (1974).
2 Kellogg, E., Murray, S., Giacconi, R., Tananbaum, H., and Gursky, H., *Astrophys. J. Lett.*, **185**, L13 (1973).
3 Abell, G. O., *Astrophys. J. Suppl.*, **3**, 211 (1958).
4 Ricketts, M. J., Cooke, B. A., and Pounds, K. A., *Nature*, **259**, 546 (1976).
5 Villa, G., *et al.*, *Mon. Not. R. astr. Soc.* (in the press).
6 Pye, J. P., and Cooke, B. A., *Nature*, **260**, 410 (1976).
7 Noonan, T. A., *Astr. J.*, **78**, 26 (1973).
8 Kellogg, E. M., in *X-ray Astronomy* (edit. by Giacconi, R., and Gursky, H.), 321 (Reidel, Dordrecht, 1974).
9 Owen, F. N., *Astrophys. J. Lett.*, **189**, L55 (1974).
10 Bahcall, N. A., *Astrophys. J.*, **193**, 529 (1974).
11 Rood, H. J., and Sastry, G. N., *Pub. astr. Soc. Pacif.*, **83**, 313 (1971).
12 Silk, J., Preprint (1976).