

TABLE 1 Molonglo positions for NSO1107 + 036

Radio	408 MHz	11 h 07 min 49.38 ± 0.07 s	03°37' 52.8 ± 1.5"
Optical	NSO	11 h 07 min 49.25 ± 0.03 s	03°37' 53.6 ± 0.4"
	Galaxy	11 h 07 min 50.51 ± 0.04 s	03°37' 56.3 ± 0.6"

probably a BL Lac object⁷. In this case the NSO is brighter than the galaxy. The second case is 0837+242 (4C24.18) which was identified with a nearby irregular blue galaxy (17 mag, ref. 18) rather than with a stellar object closer to the radio source. Burbidge¹⁹ found a continuous optical spectrum for the stellar object which has been described as blue^{14,18} and as neutral¹⁹. Véron and Véron¹⁴ consider the stellar object to be the identification but J. M. Sutton (private communication) has obtained a more accurate radio position which is 13 arc s from the stellar object. The identification is therefore seriously in doubt.

The one additional case of an NSO within 20 arc s of a blue galaxy is not a convincing argument for associating the blue galaxy with the radio source in either case (0048-097 or 1107+036). In the absence of direct evidence, we consider that further cases need to be found before the association can be justified statistically.

The general nature of neutral stellar objects is not clear, but it is suspected that they are linked to the BL Lac objects (Carswell *et al.*⁸, and P. A. Strittmatter, private communication). Racine²⁰ has suggested that BL Lac (and hence presumably other objects in this class) may represent a particular type of galaxy closely related to N galaxies and Seyfert galaxies. Among other bright BL Lac objects and possible BL Lac objects 1727+50 (ref. 7) was listed as a very compact galaxy²¹, 1101+38 (ref. 22) was listed as an extremely compact galaxy²¹, and AP Lib (1514-24) was classified as an N galaxy²³.

In fact, a problem in classifying the optical counterparts of radio sources is that any morphological classification depends directly on apparent magnitude (and therefore, presumably, distance). It may well be that the NSOs currently being identified are fainter members of the same class of compact objects. The occasional nearby presence of other galaxies would then no longer be surprising because of the known tendency of galaxies to cluster.

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Search for high frequency optical variations in Vela XR-1

THE binary system associated with the 6.87-mag B0.5Ib star, HD 77581, which is identified^{1,2} with the Vela X-ray source, 2U0900-40, is a good candidate for optical studies with high time resolution because of its relative brightness. A 28-min data set consisting of consecutive integrations of 1 ms was taken on the night of February 25-26, 1973 with the Cerro Tololo 152-cm telescope using an S-20 photomultiplier with no filter. Analyses using power-spectral and cepstrum techniques³ show no significant activity at a level greater than 0.25% in the range from 0.06 Hz to 500 Hz (except for instrumental artefacts at 60, 180, 300 and 500 Hz). No aperiodic variations were detected to a weaker limit (1%-2%); at low frequencies (<10 Hz) increased variance ascribable to atmospheric scintillation was present. This result was confirmed by a separate analysis of about 15 min of data from an observation of 1 h on the night of January 13-14, 1973. That the X-ray emission is actually associated with a degenerate, collapsed (and perhaps invisible) companion to the brilliant supergiant, however, makes a stronger limit very desirable.

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