
A VLA 1411 MHz radio survey covering 25 square degrees near the north galactic pole is briefly described. The radio survey covers the region surveyed optically by Usher (Ap. J. Suppl. 46, 117, 1981) for blue- and ultraviolet-excess (UVX) objects. The Palomar Schmidt plate material used in the optical survey, and for the continuing study of the UVX objects, was used to begin to define the optical properties of a sample of radio-selected quasars. The quasar sample has been optically identified by radio-optical position coincidence alone and is free of any optical-selection bias.

The results of the optical-identification program for the VLA survey radio sources are summarized. Identification success rates are given for the "stellar" and "galaxy" identifications and are compared to the results of other 1400 MHz radio surveys at similar, low flux densities and at higher flux densities. A complete sample of quasar candidates is isolated. The median of the radio angular-size distribution and the differential radio number counts of this sample are presented. The optical magnitude distribution, variability characteristics, and color characteristics of the sample are discussed and compared to samples of optically (UVX) selected QSOs.

18.12 Spiners: Observational Evidence and Theoretical Consequences. M. J. Valtonen, Turku Univ, Uta. In April and May 1984 periodic flux variations were seen in OJ 287 with the period of 943 sec and amplitude of 5% of the flux at 37 GHz [Informo No. 52]. The reality of the variation was demonstrated in simultaneous optical and radio observations in February 1982 [Informo No. 65]. Since then the period has remained constant with the accuracy of 1 sec. This observation has been interpreted as evidence for existence of spinars in QSO's. The instability properties of spinars have been studied. It is found that an important mode of instability leads to symmetric ejection of spinar pairs. The properties of the pairs have been compared with double QSO sources. [Informo No. 71]. Radio emission from spinar trails has been calculated in a model galaxy with a galactic wind. It is found that the non-escaping spinars produce much brighter trails of the escaping spinars. When the orbital phase of the non-escaping spinar is varied, the major types of double radio source morphology are produced, including jets and aligned outer and nuclear components [Informo No. 72].


A complete sample of 35 X-ray selected sources has been observed with the Very Large Array at 6 cm to investigate the relationship between radio and X-ray emission in extragalactic objects. Nine sources are detected in the radio above a limiting sensitivity of ~1-2 mJy. Detections include 3 AGNs (QSOs or Seyferts), 2 clusters/groups of galaxies, 2 galaxies and 2 BL Lacs. We have combined the present data with similar data previously obtained to increase the sample of X-ray sources observed at 6 cm and thus further investigate the relationship between radio and X-ray emission in extragalactic objects. The frequency of radio emission in X-ray selected quasars is compared with that of optically selected quasars using the integral radio-optical luminosity function. The result, although not conclusive because of the still limited statistics involved, suggests that the probability for X-ray selected quasars to be radio sources is higher than for optically selected ones. No obvious correlation is present in our sample of X-ray selected poor clusters between the richness or the X-ray luminosity of the cluster and the presence of a radio galaxy.

18.14 Seyfert Galaxy Spectra and Seyfert Galaxy Models. D. E. Osterbrock, J.A.S. and Tuck Obs., UCSC. In a continuing survey at Lick Observatory of stated or suspected Seyfert galaxies and QSO's, mostly from lists of Markarian, Lipovetskii and Stepanian, Kazarian, and Arkelian, the following objects were classified from their spectra as Seyfert 1: Mrk 634, 885, 1239 and 1400. In addition, Mrk 662, 1152 and 1447 are Seyfert 1.5 objects, while Mrk 471 and 1179 are Seyfert 1.9's. From their spectra Mrk 403, 686, 917, 955 and 1073 are Seyfert 2's. The following objects are emission-line galaxies that are not Seyferts: Mrk 266 NE, 938, 945, 1133, 1178, 1259 and 1459, Kaz 27 and 28, and Akn 594. Of these, Mrk 594 has the extremely large Balmer decrement Hα/Hβ > 20 and is evidently strongly reddened. Mrk 984 is not a Seyfert galaxy but has irregular emission-line profiles, broader than in Seyfert 1's, which suggest a close, unresolved double nucleus (or nuclei).

Mrk 266 SW and 1066 are objects that are near the boundary between Seyfert 2's and narrow emission-line galaxies; they are discussed in terms of the idea, put forward by Ferland and Netzer, Hapern and Steiner, and Keel, that most of these objects are photoionized by featureless continua of various strengths.

There are now 10 known Seyfert 1.8 or 1.9 galaxies, deferred by the presence of strong narrow emission lines plus weak, broad Hα emission. All of them have very large broad Hα/broad Hβ ratios, suggesting heavy dust extraction Mrk 1239 has relatively narrow Hα profiles for a Seyfert 1 galaxy, as do Mrk 42, 493 and 1044, and also Mrk 359, the most extreme case of this type, studied by Davidson and Kimman. All of these objects are discussed in the context of suggested Seyfert galaxy models, in terms of photoionization, dust, and orientation effects.