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RADIO EMISSION IN PECULIAR GALAXIES

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During the last decades a number of surveys of peculiar galaxies have been carried out and accurate positions become available. Since peculiarities are a possible evidence of radio emission (Wright, 1974; Sulentic, 1976; Stocke et al.,1978), we have selected a sample of 24 peculiar galaxies with optical jet-like features or extensions in different optical catalogues, mainly the Catalogue of Southern Peculiar Galaxies and Associations (Arp and Madore, 1987) and the ESO/Uppsala Survey of the ESO(B) Atlas (Lauberts, 1982) for observation at the radiocontinuum frequency of 22 GHz. The sample is listed in the Table.

Sol (1987) studied this sample and concluded that the majority of the jet-like features seem to admit an explanation in terms of interactive galaxies with bridges and/or tails due to tidal effects. Only in few cases the "jets" seem to be possibly linked to some nuclear activity of the host galaxy.

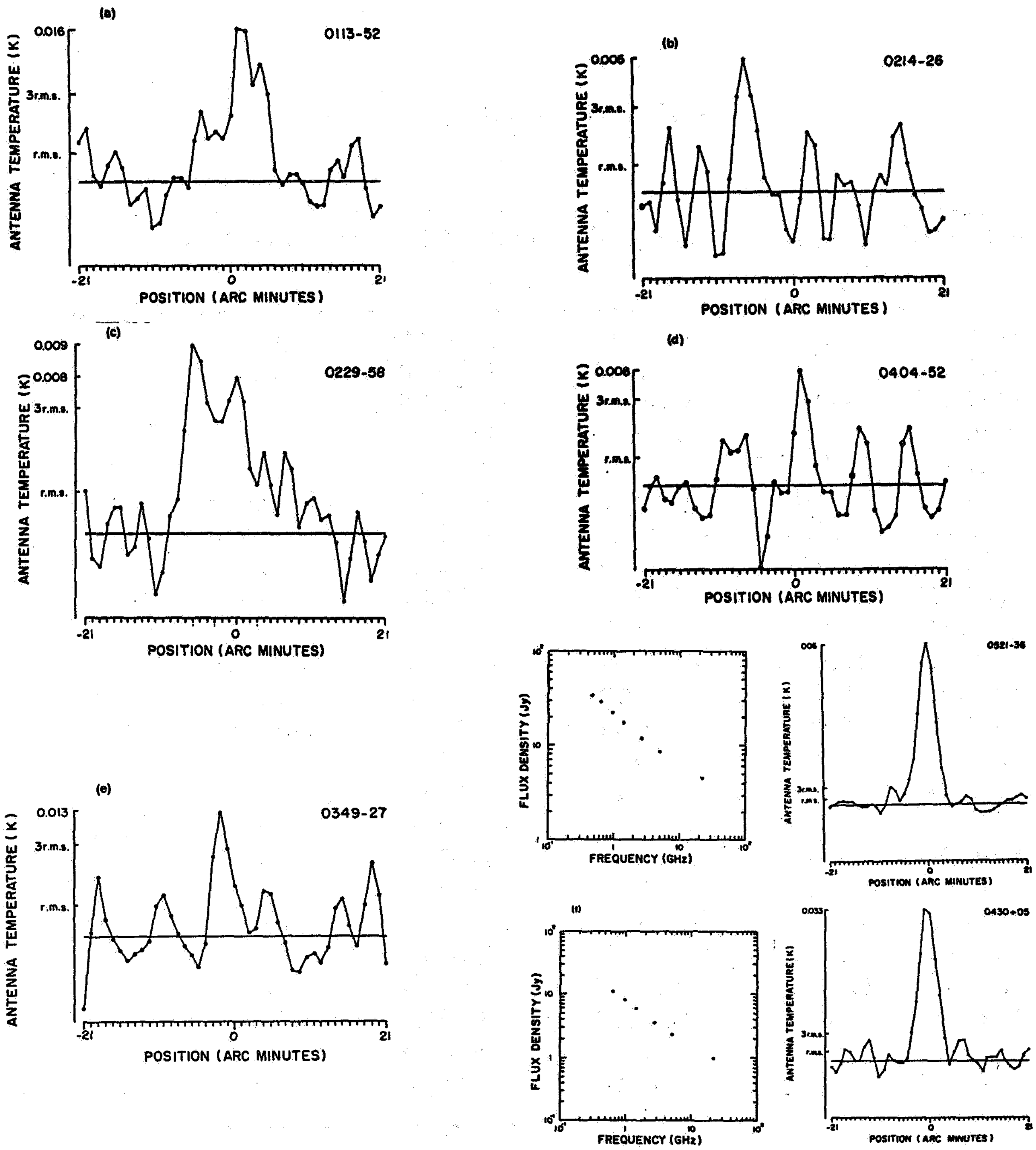
The observations were made with the 13.7m-radome enclosed Itapetinga Radiotelescope (HPBW of 4.3 arcmin), in Brazil. The receiver was a 1 GHz d.s.b. super-heterodine mixer operated in total-power mode, with a system temperature of aproximately 800K. The observational technique consisted in scans in right ascention, centralized in the optical position of the galaxy. The amplitude of one scan was 43 arcmin, and its duration time was 20 seconds. The integration time was at least 2 hours (12 ten-minute observations) and the sensibility limit adopted was an antenna temperature greater than 3 times the r.m.s. error of the baseline determination. Virgo A was used as the calibrator source.

Three galaxies were detected for the first time as radio sources and four other known galaxies at low frequencies had their flux densities measured at 22 GHz. The results for these sources are presented in the figures (a) to (f).

Sample of Peculiar Galaxies

SOURCE	DESIG	R.A. (1950) h m s	DEC. (1950) o ' "	PECULIARITY	
0113-52		01 13 06	-52 55 00	jet	(S)
0145-48		01 45 06	-48 39 00	tail	(S)
0147-27	414IG4	01 47 13	-27 56 54	tail	(L)
0149-48		01 49 30	-48 51 00	jet	(AM)
0207-49	197IG25	02 06 59	-49 31 18	jet	(AM)
0214-26	478G19	02 14 03	-26 10 54	streamer	(L)
0229-58	115G15 (*)	02 29 41	-58 08 18	S0 in cl	(L)
0256-36	356IG24	02 56 56	-36 48 48	jet	(L)
0339-54	156IG7	03 39 56	-54 09 57	streamer	(L)
0349-27	(*)	03 49 32	-27 53 32	jet	(C)
0404-52	156G38	04 04 52	-52 47 48	b dwarf	(S)
0422-51	202G14	04 22 30	-51 42 48	jet	(AM)
0426-55	157G32	04 26 44	-55 09 40	interact	(S)
0430+05	3C120 (*)	04 30 30	+05 15 00	jet	(AM)
0521-36	(*)	05 21 13	-36 30 16	jet	(S)
0606-29	425G9	06 06 37	-29 32 00	jet	(L)
0646-64	87IG41	06 46 37	-64 54 12	pair	(L)
2030-66		20 30 18	-66 26 00	jet	(AM)
2110-61	144G20	21 09 55	-61 29 48	jet	(AM)
2155-69	75G45	21 55 06	-69 43 30	jet	(AM)
2207-67	108IG17	22 07 00	-67 06 54	jet	(AM)
2300+16		23 00 30	+16 20 00	Mkr	(S)
2329-41		23 29 24	-41 00 00	jet	(AM)
2331-38	347G22	23 30 49	-38 52 54	jet	(AM)

Columns are: (1) galaxy name; (2) ESO/Uppsala designation, an asterisk indicates radio emission in low frequencies; (3)-(4) equatorial coordinate s; (5) peculiarities; and (6) references: (S) Sol (1987), (L) Lauberts (1982) , (AM) Arp and Madore (1987), and (C) Christiansen (1977)



Figures are: (a) 0113-52 - The radio source position coincides with the optical galaxy. The flux density is (1.2 ± 0.2)Jy. (b) 0214-26 - The radio source is shifted 7 arcmin from the optical galaxy. Since the redshift of this object is not known, it is not possible to calculate the actual distance between the radio and optical sources. If we suppose a common redshift for galaxies like 0.02, the distance will be 200 Kpc, a typical value between the radio source and the optical counterpart. The flux density is (0.4 ± 0.1)Jy.

(c) 0229-58 - The radio source is about 6 arcmin shifted from the galaxy. Using a radial velocity of 9590 Km/s (Lauberts, 1982) for calculation, the distance between the optical position and the maximum of the radio emission is 335 Kpc. The maximum flux density is (0.7 ± 0.2)Jy. (d) 0349-27 - The radio source position coincides with the optical galaxy. The flux density is (1.0 ± 0.2)Jy. This source has fluxes measured at low radio frequencies (Wills, 1975) and a typical non-thermal steep-spectrum. (e) 0404-52 - The radio source coincides with the optical galaxy. The flux density is (0.6 ± 0.2)Jy. (f) 0430+05 and 0521-36 - Both galaxies are well known radio sources at low radio frequencies. The flux densities at 22 GHz are (2.5 ± 0.2)Jy and (4.5 ± 0.2)Jy, respectively. The spectrum is non-thermal in both cases, and their radio emission coincides with the optical position.

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