DAILY RADIO FREQUENCY OBSERVATIONS OF SELECTED OBJECTS

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In Table I we present the list of 38 celestial objects that have been observed since January 1978 at 2.7 and 8.1 GHz with the Green Bank interferometer. The sources fall naturally into three categories: radio stars, possibly Galactic sources, and extragalactic sources. SS433, Cyg X-3, and each extrgalactic source is measured several times per day while the other sources are measured once every three days. Reports on the entire program will be found in Geldzahler et al. (1983a), and on specific sources: SS433--Johnston et al. (1983a), BL Lac--Johnston et al. (1983b), Cyg X-3--Geldzahler et al. (1983b) and elsewhere in this volume), and CTA 26--Spencer et al. (1983).

We have defined for the variable sources a "rapidity index" which gives the number of maxima/year. This index includes major outbursts as well as "flickering". We also show in Table I the value of k ($-d(\log S_{max})/d(\log \lambda)$). The values of this index fall into three groups: $k > 0$, $k \sim 0$, and $k \sim -0.4$. A uniform source that is initially optically thick and whose energy losses occur primarily through adiabatic expansion should yield $k = -1$ (c.f. van der Laan 1966). We find that $k > 0$ when we have an optically thin object such as SS433 or Cyg X-3 during outburst. To make the value of $k \sim -0.4$ more agreeable with the standard model, we suggest the uniformity should be replaced by a variable opacity throughout the source. Finally $k \sim 0$ in those sources, such as the "quiescent" Cyg X-3, where repeated, rapid flickering has stretched and weakened the magnetic field in the immediate vicinity of the source.

REFERENCES

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Table I List of Program Sources

Source	ID	Observing Interval[a]	Redshift	RI[b]	k[c]	Other Names
a. Radio Stars						
0236+610		5001-5007		I		LSI 61 +303
0323+285		4976-5006		--		UX Ari
0334+004		4971-5010		28.1:		HR1099
1617-155		4977-5517		--		Sco X-1
1909+048		4967-5517		5.7	+0.53±0.03	SS433
1956+350		4976-5105		--		Cyg X-1
2030+407		4971-5517		--	-0.04[d]+0.5	Cyg X-3
2259+586		4974-5129		--		GF2259+586
b Possibly Galactic Objects						
0125+628		4976-5517		4.0		G127.11+0.54
2013+370		4983-5517		3.7		G74.89+1.22
c Extragalactic Objects[e]						
0224+671	Q	3942-5517		3.6		
0235+164	BL	4971-5148		4.1	-0.42±0.05	OD160
0237-234	Q	3941-5148	2.223	1.5		OD-263, PHL8462
0316+413	G	3942-4066		I		3C84
0336-019	Q	3942-5148	0.852	6.0	-0.01±0.03	CTA26
0355+508	EF	3941-5148		3.1		
0402-362	Q	3941-4066	1.417	8.7:		
0727-115		5060-5148		24.9:	-0.09±0.02	
0742+103	EF	3942-4060, 5010-5059		I		
0851+203	BL	3942-5148	0.306::	3.9	-0.48±0.01	OJ287
0923+392	Q	3942-4066	0.699	I		C39.25, DA267, OK340
0954+658	BL	3942-5517		2.1	-0.04±0.02	
1226+023	Q	3943-5517	0.158	I		3C273, 4C02.32, NRAO400, ON044, DA324
1245-197	Q	3942-5517		0.0		
1328+254	G	3942-5517	1.055	0.0		3C287, 4C25.43, NRAO424, OP247, DA345
1328+307	Q	3942-5517	0.849	0.0		3C286, 4C30.26, NRAO425, OP348, DA346, CTA60
1502+106	Q	3942-5517	1.833	2.7	+0.08±0.03	OR103
1519-273	Q	3943-4067		11.8:		
1641+399	Q	3941-5517	0.595	0.6		3C345, 4C39.48, NRAO513, OS368, DA420
1749+701	BL	3943-5517		2.4	-0.03±0.04	W1
1901+319	Q	3943-4066		I		3C395
2021+614	G	5010-5059		I		
2037+511	Q	3943-4066	1.686	I		3C418, 4C51.12, NRAO636
2048+312	Q	4970-5517	3.18	22.3		CL4
2134+004	Q	4011-5517	1.936	I		PHL61, DA553, OX057
2200+420	BL	3942-5517	0.0688	5.7	-0.30±0.09	BL Lac
2251+158	Q	3942-5517	0.859	3.9	-0.12±0.01	3C454.3, 4C15.76, OY185, NRAO701, DA506
2345-167	Q	3942-4066	0.600	20.6:		OZ-176

a As of 1 July 1983
b Emission line redshifts taken from Hewitt and Burbidge (1980)
c Rapidity Index: the number of maxima per year; I= variations exist by the value of RI cannot be determined with reliability, -- = no obvious variation, : = value is uncertain due to short time base
d k = (d log peak flux density)/(d log frequency)
e In Cyg X-3, k~0.5 during optically thin outbursts and k~-0.4 during optically thick outbursts