THE MILLIARCSECOND STRUCTURE OF FOUR SEYFERT GALAXIES AT λ18 CM

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The major contending scenarios capable of explaining various aspects of the Seyfert phenomenon in AGNs are (i) the Super-massive Black-Hole model and (ii) the Starburst model. Detailed optical emission-line and radio images of Seyfert nuclei, and their mutual correlations, provide important clues in evaluating the claims of each. Using the EVN at λ 18 cm, we have mapped four Seyfert galaxies, Mkn 1, 3, 231 and 463 at a resolution of $\sim$ 25 *mas*. The maps, and comparisons with images at other wavelengths, will be presented elsewhere (Ghosh et al. 1993, in preparation). Here, we present parameters derived from elliptical-Gaussian fits to all discernible components (Table 1).

Table 1

Source*	Dist *mas*	PA °	S_i *mJy*	Fitted size *mas* × *mas*, °	Source	Dist *mas*	PA °	S_i *mJy*	Fitted size *mas* × *mas*, °
Mkn 1			44	10 × 7, 78	Mkn 231, 1	0		75	< 12.8
Mkn 3, 2	366	77	36	46 × 44, 142	2	25	187	39	25 × 3, 41
3	233	79	30	40 × 38, 147	3	65	202	23	29 × 14, 9
4	0		11	37 × 16, 127	4	136	183	3	< 16.7
5a	188	261	18	73 × 21, 108					
5b	300	264	8	33 × 29, 140	Mkn 463, 1a	0		60	23 × 16, 140
5c	320	264	5		1b	51	196	16	37 × 26, 37
5d	330	264	3		1c	89	193	3	< 18.6
6a	569	260	17	61 × 48, 50	2a	267	172	5	14 × 12, 10
6b	580	261	2		2b	284	177	5	24 × 7, 134
6c	592	260	4		2c	310	174	2	< 10.3
7	741	262	4	19 × 16, 7	2d	330	179	3	19 × 8, 3
8a	1250	267	109	53 × 34, 26	3a	1247	178	8	46 × 42, 37
8b	1286	266	49	47 × 30, 54	3b	1280	178	2	< 24.8
8c	1281	270	13	< 44.9					
9	646	138	8	36 × 26, 79					

* For Mkn3, components are numbered as in Kukula et al. 1993

Three of the galaxies observed, Mkn 3, 231 and 463, show collimated emission indicating jet-like structures containing non-thermal knots. This implies radio-galaxy/quasar-type phenomena in the central regions. For Mkn 1, the structure does not rule out the possibility of a star-burst origin for the radio emission. However, the brightness temperature of the source appears to be the highest of any in this study at $\approx 10^9$ K!

References

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