REPORT OF REFEREE

Author, Title: Stefi A. Baum et al.: EXTENDED OPTICAL LINE EMITTING GAS IN ~~RADIO GALAXIES: BROAD-BAND OPTICAL, NARROW-BAND OP~~TICAL, AND RADIO IMAGING OF A REPRESENTATIVE SAMPLE

This is an impressive piece of work and the authors are to be commended for publishing it in the Supplements instead of piecemeal.

I have noted a few places in the manuscript where a change or addition is needed.

It seems important for the authors to refer to Hansen, Nørgaard-Nielson, and Jørgensen (December) 1987, A&A Supplements article, which covers much of the same optical material.

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TABLE 1
Sample Members

Source	Redshift	RA (J2000)	DEC (J2000)	E_{B-V}	kpc arcsec^{-1}
3C 29 *	0.0447	00 55 01.56	−01 39 39.9	0.043	0.81
3C 33 *	0.0595	01 06 14.55	+13 04 15.4	0.03	1.06
3C 40 *	0.0177	01 23 27.55	−01 36 18.9 [b]	0.043	0.33
B2 0149 + 358	0.0162	01 49 50.01	+35 54 20.5 [b]	0.04	0.31
3C 63 *	0.175	02 18 21.94	−02 10 32.5	0.0	2.68
3C 75N *	0.0241	02 55 02.99	+05 49 37.0 [b]	0.09	0.45
3C 75S *	0.0241	02 55 03.08	+05 49 20.9 [b]	0.09	0.45
3C 78 *	0.0288	03 05 49.05	+03 55 13.1 [b]	0.09	0.54
3C 88 *	0.0302	03 25 18.20	+02 23 20.0	0.09	0.56
3C 89 *	0.1386	03 31 43.01	−01 20 55.9	0.06	2.22
PKS 0349−278 *	0.066	03 49 31.77	−27 53 31.3	...	1.16
3C 98 *	0.0306	03 56 10.17	+10 17 32.5	0.15	0.57
3C 105 *	0.0886	04 04 38.99	+03 34 27.5	0.15	1.52
3C 109 *	0.3056	04 10 54.86	+11 04 40.9	0.21	4.02
PKS 0634−206 *	0.056	06 34 23.27	−20 32 18.5	0.50	1.00
3C 171	0.2384	06 51 10.92	+54 12 48.1 [b]	0.09	3.38
PKS 0745−191 *	0.1028	07 45 18.45	−19 10 11.6 [a]	0.3 [a]	1.73
3C 192 *	0.0598	08 02 32.31	+24 18 54.9 [b]	0.03	1.06
3C 196.1 *	0.198	08 12 56.99	−02 59 13.7 [a]	0.06	2.94
3C 218 *	0.055	09 15 41.20	−11 53 04.9	0.03	0.98
3C 219 *	0.1744	09 17 50.68	+45 51 43.8	0.0	2.67
3C 223 *	0.1368	09 36 50.86	+36 07 35.5 [a]	0.0	2.20
3C 227 *	0.0861	09 45 06.54	+07 39 17.4	...	1.48
3C 264 *	0.0208	11 42 29.56	+19 53 02.3	0.0	0.39
3C 272.1 *	0.0031	12 22 31.58	+13 09 50.7	0.02	0.06
3C 274 *	0.0043	12 28 17.56	+12 40 02.0	0.02	0.07
3C 275 *	0.480	12 39 44.91	−04 29 53.9 [a]	0.007	5.28
3C 278 *	0.0145	12 51 58.56	−12 17 51.9	...	0.28
3C 285	0.0794	13 19 05.22	+42 50 55.7 [b]	0.0	1.38

axis.

3. The presence of much fainter line emitting gas ~ 45″ (25 kpc) northeast of the nucleus, along the radio source axis, and of a very faint, curving, tangential filament of line emitting gas ~ 30″ (17 kpc) due south of the nucleus, both of which are confirmed spectroscopically.

Note discussion of excitation conditions in Simkin 1979

In the radio, at 3.8″ resolution, 3C 98 shows single hotspots in both the northern and the southern radio lobes, separated by ~ 310″ (175 kpc). A jet is present in the northern lobe, though is is strongly blended with diffuse lobe emission in the image shown in Figure 14(b). The jet is straight along most of its length, but curves abruptly to the east at a bright knot ~ 120″ from the core, before merging into the northern hotspot. There is a ridge of bright emission curving to the south of the northern hotpost. The large scale radio structure of 3C 98 is under represented in our maps, but 3C 98 does show a cocoon or bridge of lower surface brightness radio emission extending from the hotspots back towards the core which, at least to the north, appears to show a tail of emission extending to the west of the radio source axis, near the radio core. The fractional polarization of the radio emission from 3C 98 at 3.8″ resolution and 6 cm is high throughout most of the source structure. The average fractional polarization over the source is 28%.

An understanding of the nature of the relationship between the extended line emitting gas and the radio source structure awaits more detailed studies. As described above, the brightest extra-nuclear line emitting gas is skewed with respect to the radio source axis but the most distant line emitting gas is located along the radio source axis.

3C 105 (0404+03)

The host galaxy of 3C 105 is a suprisingly small and underluminous galaxy to be associated with a high luminosity radio source. We detect only nuclear Hα+ [NII] emission from the host galaxy of 3C 105. In the radio, 3C 105 shows a bright southern hotspot and only a weak, resolved hotspot in the northern lobe (at 6 ″ resolution), separated by ~ 335″ (510 kpc). Narrow bridges of emission extend from the hotspots back towards the core.

3C 109 (04120+11)

The host galaxy of 3C 109 is an isolated, broad line (Grandi and Osterbrock 1978), N