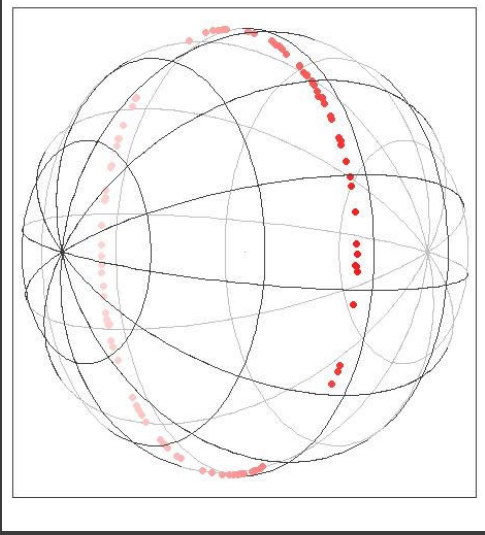


Yu.N. Parijskij, P. Thomasson, T. W.B. Muxlow , O.P. Zhelenkova,
A.I. Kopylov, R. Beswick, N.S. Soboleva, A.V. Temirova,
O.V. Verkhodanov, T.A. Fatkhullin

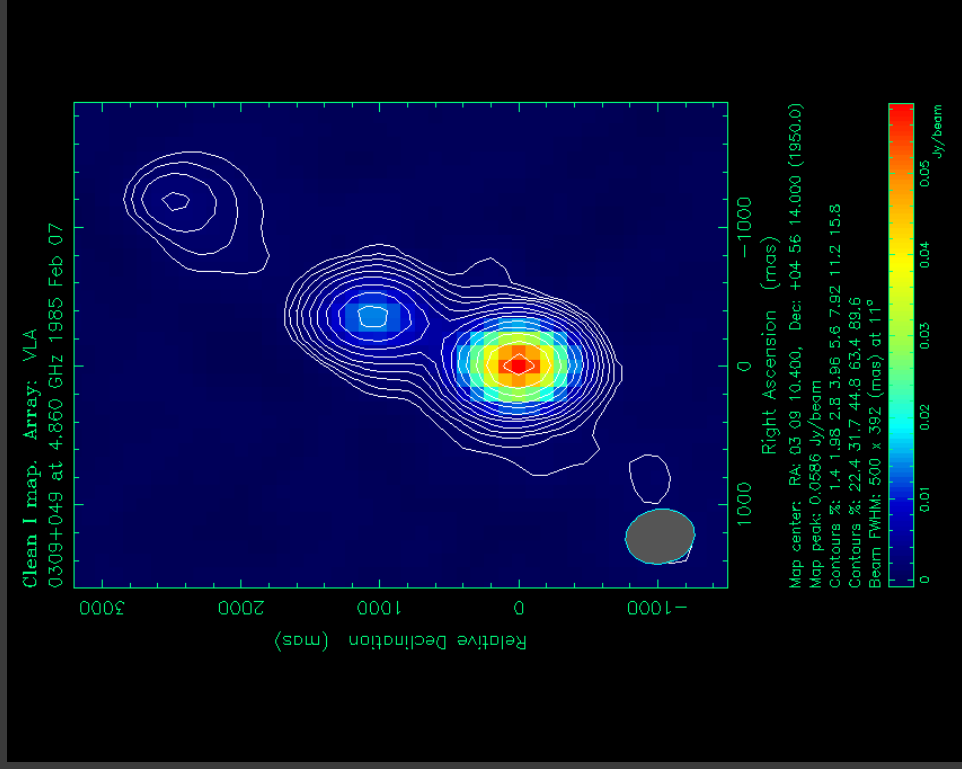
MERLIN AND EVN OBSERVATIONS OF A $Z=4.515$ RADIO GALAXY, RC J0311+0507, AND THE PROBLEM OF SMBHS IN THE EARLY UNIVERSE

RATAN-VLA-6m survey for distant radio galaxies searching:



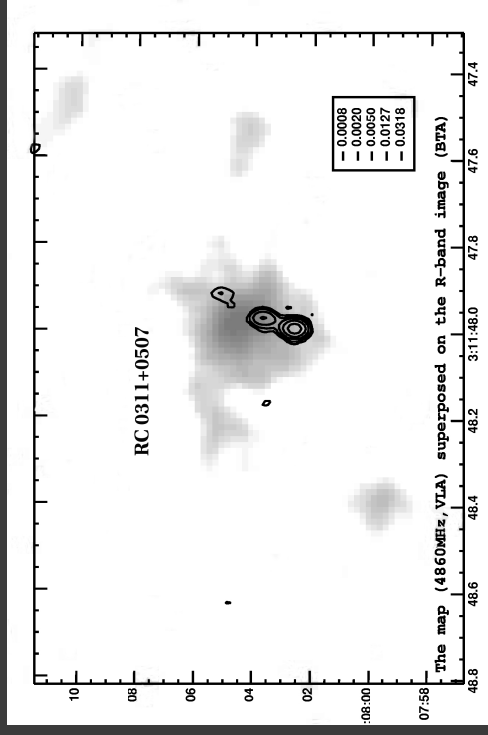
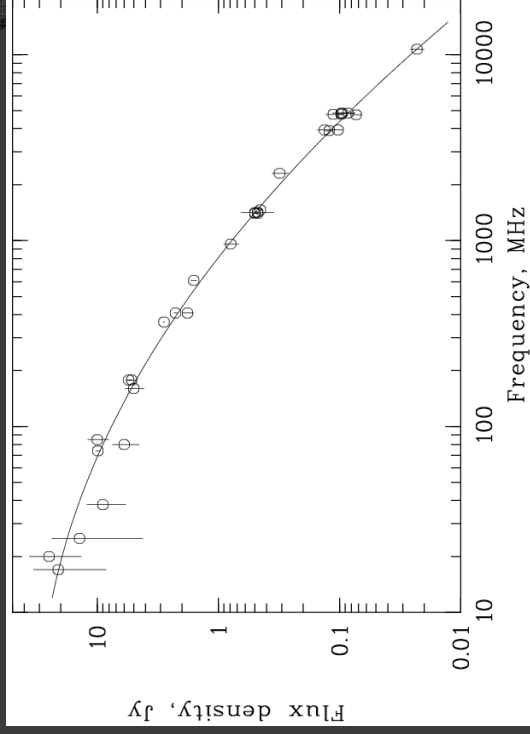
- RC catalogue obtained from observational data of a deep survey of 20' sky strip centred on $\delta(1981)=+04^{\circ} 57' \pm 20'$ (SS433) ($\lambda=7.6\text{cm}$) + UTRAO catalogue $\Rightarrow$ radio sources with $\alpha>0.9$
- VLA data $\rightarrow$ morphological structure and coordinates $\Rightarrow$ a steep spectra sample: 104 FRII objects with $\text{LAS}<20''$
- The 6-m telescope observations with CCD cameras (1991-2008): ~ 700 R-filter images ($\sim 600\text{sec}$) + BVI
- The 6-m telescope (SCORPIO) spectral observations

RC J0311+0507 (4C+04.11)



VLA 4.86 GHz image, 0.5" resolution

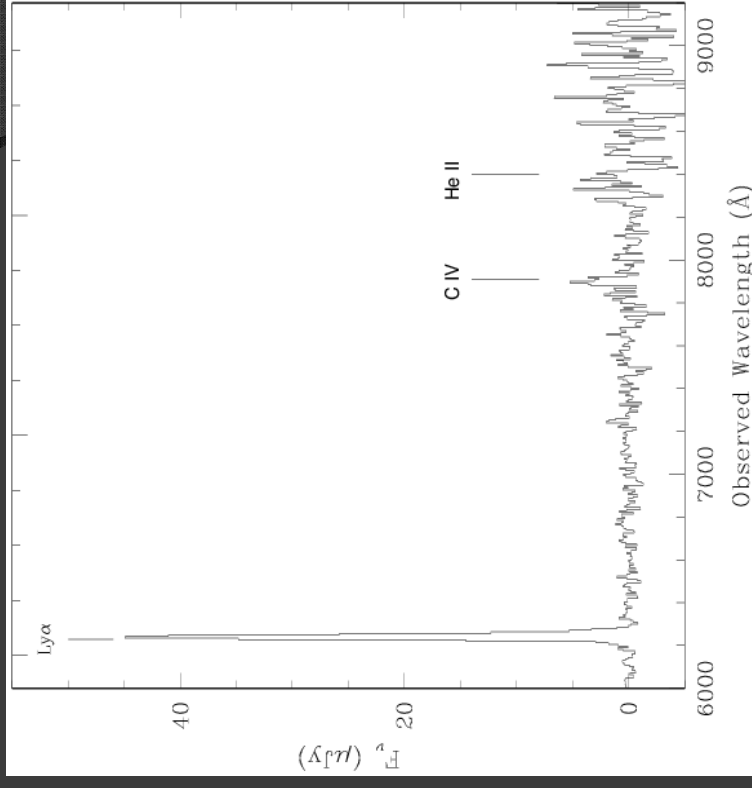
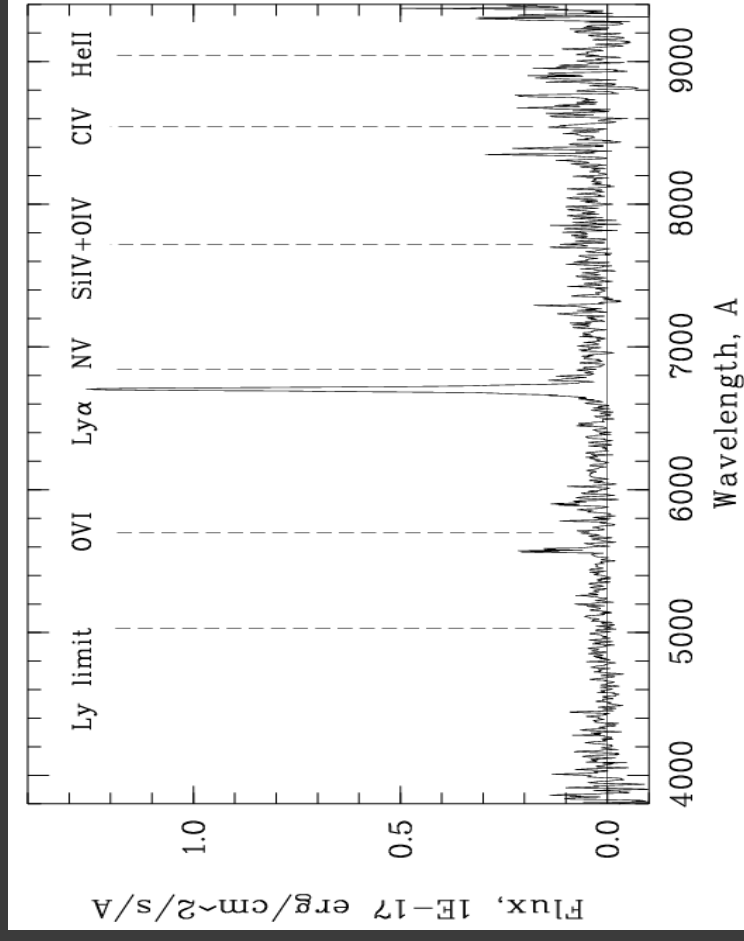
Radio spectrum $\alpha=1.29$



The 6-m telescope R-image 600s

RC J0311+0507

TN J1338-1941



2004 6-m telescope/ SCORPIO,

3600 s $z=4.514$

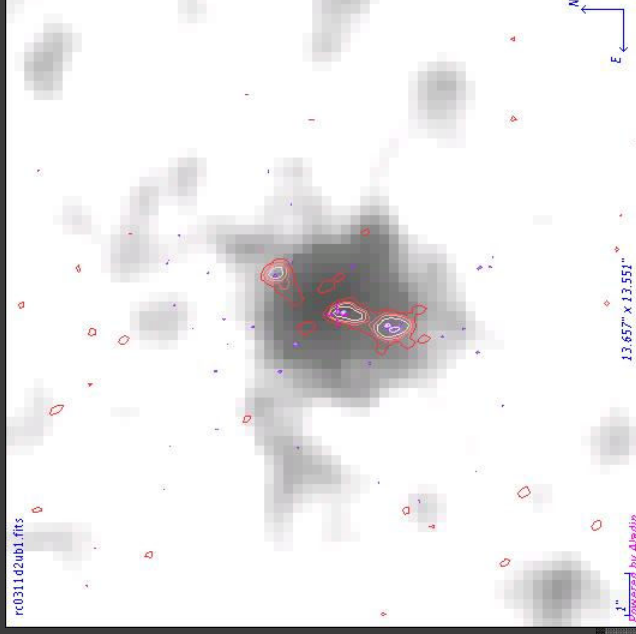
1998 ESO 3.6m EFOSC1

6300 s $z=4.11$

Kopylov et al., AstrRep, 32, 438, 2006
deBreuck (priv. com.) VLT/SYNPHONI

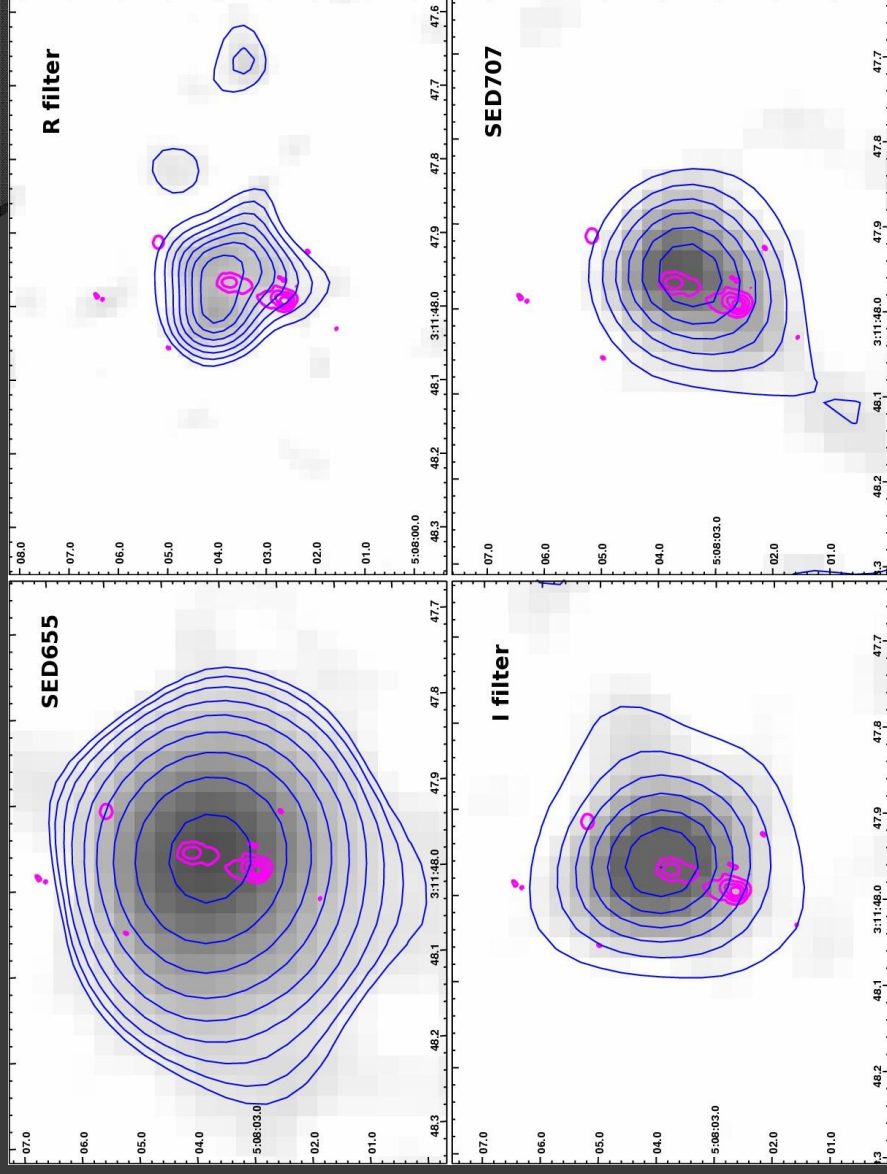
FRII Radiogalaxies with $z > 4$

Object	z	mopt	mK	S1400, mJy	α	LAS ($''$)	Morph.
TN J0924–2201	5.199	>24	R	21.7	1.65	1.2	D
RC J0311+0507	4.514	23.1	R	--	1.29	2.8	AD+C
VLA J123642+621331	4.424	24.9	I	21.4	0.94	0.4	C+E
6C 0140+326	4.413	24	I	20.0	1.17	2.6	D
8C 1435+63	4.261	23.6	I	19.5	1.37	3.9	D+C
TN J1338–1941	4.11	22.4	R	20.0	1.33	5.5	AD+C
TN J1123–2154	4.109	>24.5	R	20.3	1.57	0.8	S
7C 1814+670	4.05	24.1	R	19.4	1.08	18.	D

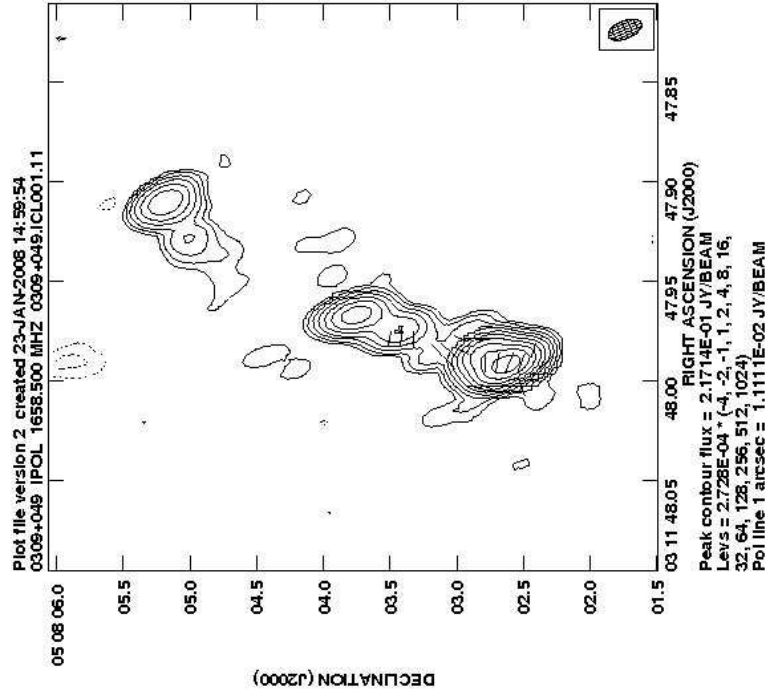


1995.09 22.9 ± 0.2 R
 1999.11 22.7 ± 0.2 R
 2005.01 23.2 ± 0.3 R
 2008.02 22.3 ± 0.2 R

1999.11 24.7 ± 0.5 B
 1999.11 23.7 ± 0.2 V
 1999.11 22.7 ± 0.2 R
 1999.11 22.2 ± 0.3 I

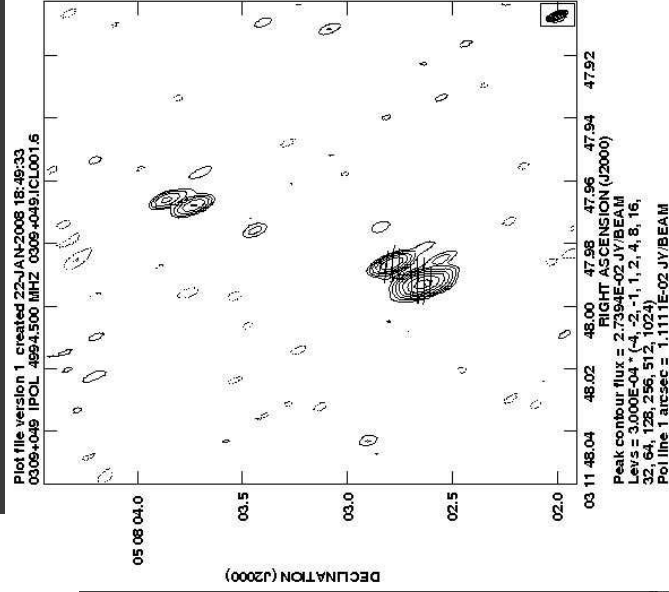
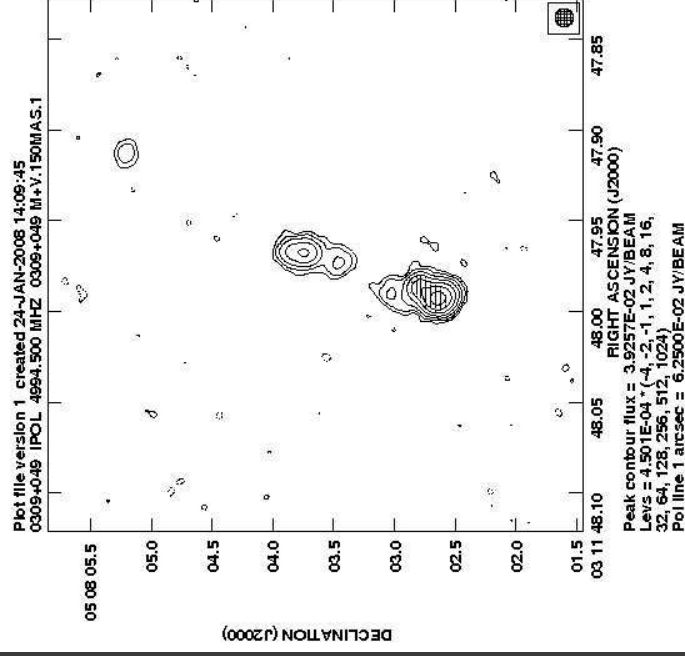


The 6-m telescope images
 SED707 $\lambda_{\text{eff}}=6622\text{\AA}$, $\Delta\lambda=191\text{\AA}$
 SED655 $\lambda_{\text{eff}}=7036\text{\AA}$, $\Delta\lambda=207\text{\AA}$



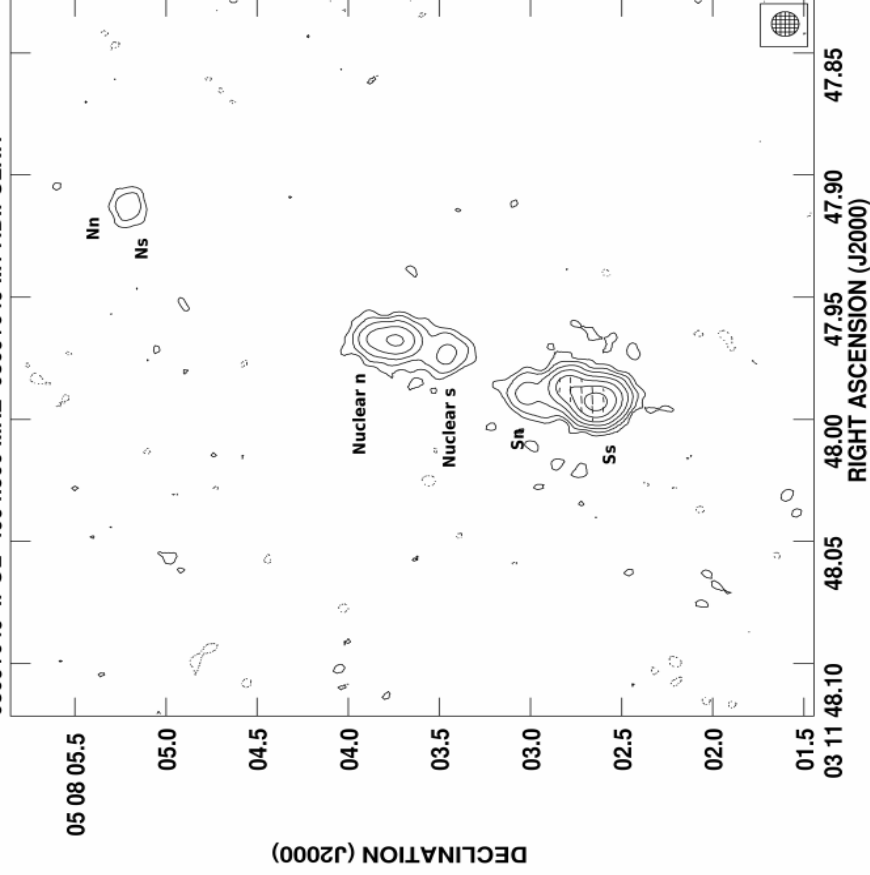
MERLIN 1.7ГГц
L-band
264x132mas

MERLIN+VLA
C-band
150x150mas



MERLIN 5ГГц
C-band
110x39mas

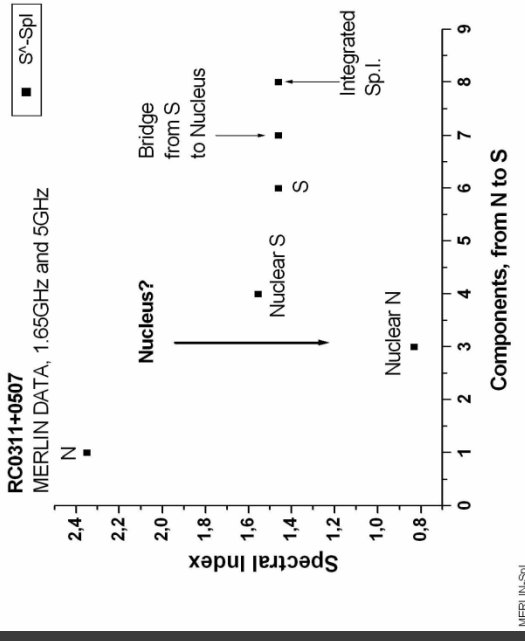
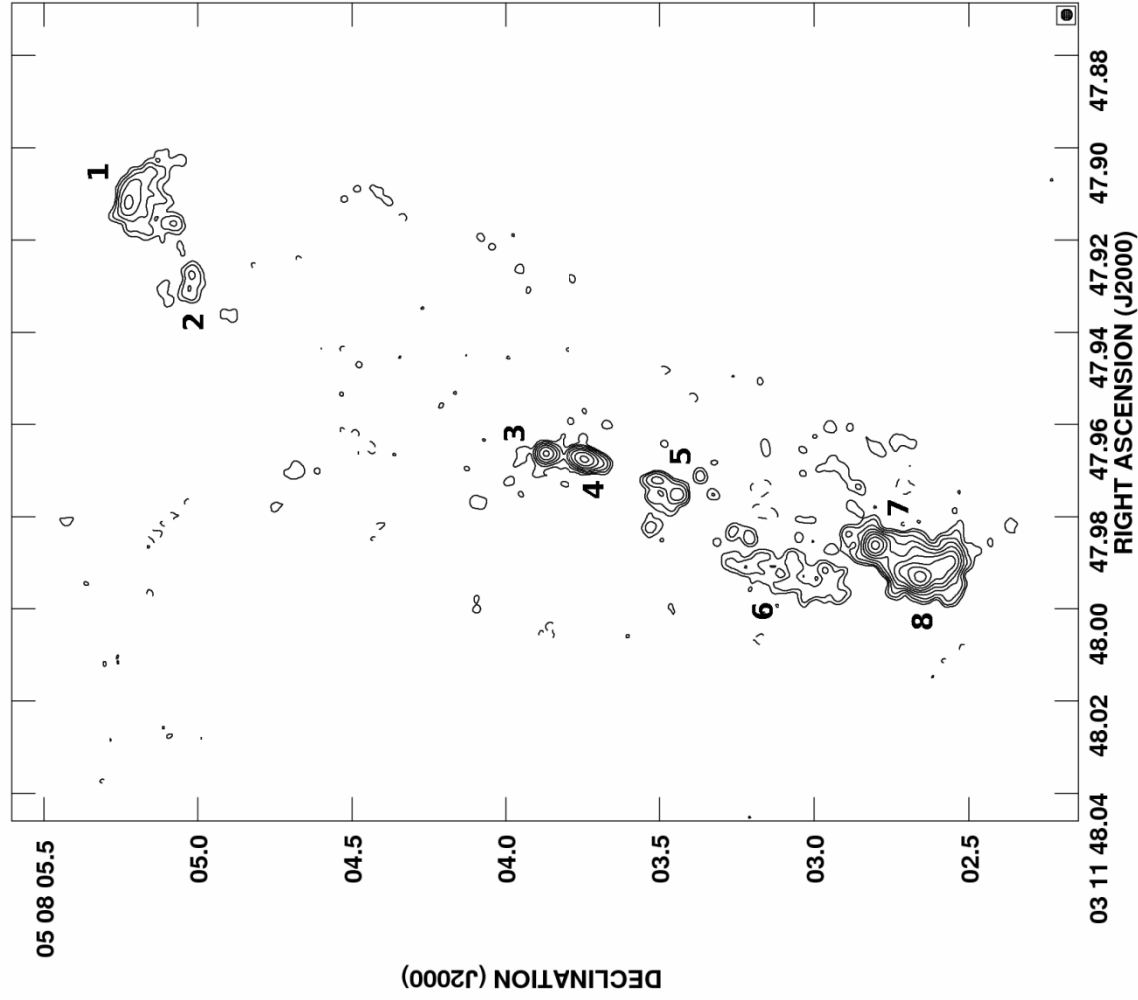
Plot file version 2 created 22-JAN-2008 18:29:30
0309+049 IPOL 4994.500 MHz 0309+049 M+V.DIFCLN.1



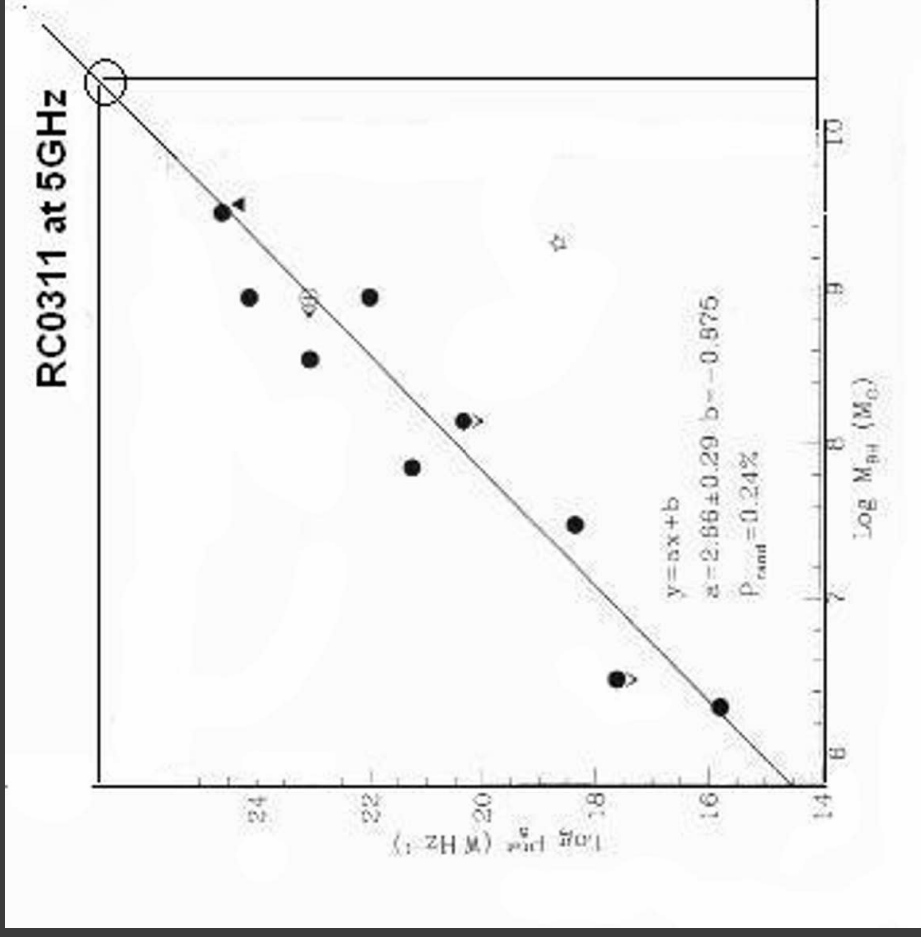
Peak contour flux = 4.0191E-02 JY/BEAM
Levs = 4.501E-04 * (-4, -2, -1, 1, 2, 4, 8, 16,
32, 64, 128, 256, 512, 1024)
Pol line 1 arcsec = 6.2500E-02 JY/BEAM

Name	Size, kpc	E _{total} , erg	B, Gauss	L _{radio} erg/s
Nothern n	0.5	10 ⁵⁶	6*10 ⁻⁴	8.2*10 ⁴³
Nothern s	0.4			
Nuclear n	0.9	7*10 ⁵⁶	5.7*10 ⁻⁴	1.9*10 ⁴³
Nuclear s	1.1	6.5*10 ⁵⁶	4.4*10 ⁻⁴	7.3*10 ⁴³
Southern n	1.5			
Southern s	1.6	7.4*10 ⁵⁶	1.1*10 ⁻³	8.4*10 ⁴³

Name	Peak 1.7GHz	Peak 5GHz	Spectral Index
N n	13	0.9	2.3
N s	2.16	<0.2	
Nuclear n	27.3	7.2	0.8
Nuclear s	8.7	1.8	1.55
S n		1.8	
S s	512	42.3	1.46



MERLIN + e-VLBI
L-band
35 x 35 mas



Thank you for your attention !

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08-02-4863, 07-02-12055-ofi and 10-07-00412