



Universidad de Guanajuato

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A new sample of Giant Radio Galaxies:
redshift determination and follow-up
of candidates with radio observations

THESIS

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Abstract

We present the results of a search for giant radio galaxies (GRGs) larger than 1 Mpc in projected size and our own spectroscopic follow-up and radio higher-resolution radio images with the Karl G. Jansky Very Large Array (VLA).

The host galaxies were identified using the DSS (Digital Sky Survey) and SDSS (Sloan Digital Sky Survey) in order to find spectroscopic or photometric redshift values. For those candidates without spectroscopic redshift value reported in the literature, we carried out observation using the Gran Telescopio de las Canarias GTC, 10.4 m for the faintest host galaxy candidates, and two 2.1 m telescopes in Mexico (at Observatorio Astronómico Nacional, OAN and Guillermo Haro, GH) for the brightest.

For 11 very extended radio sources, with either undetected radio core or uncertain radio structure, we carried out VLA observations in C-configuration at higher angular resolution than NVSS (NRAO VLA Sky Survey).

We found a total of 30 previously unreported GRGs: we obtained spectroscopic redshifts with the Mexican telescopes for 15 of them, and we have used the GTC in five of them. We confirmed 11 GRGs using VLA radio observations, from which one could be the largest radio quasar known (4 Mpc). We discovered and confirmed one GRG (J1234+5318, 4.2 Mpc h_{75}^{-1}) larger than 3C 326 (4.05 Mpc h_{75}^{-1}). According to their spectroscopic characteristics, three host galaxies could be spirals which is very rare for radio galaxies in general.

Contents

Abstract	i
Contents	ii
1 Introduction	1
1.1 Galaxy classification	2
1.1.1 All galaxies	2
1.1.2 The central engine: an AGN	5
1.1.3 Active Galaxies	9
1.2 Radio Galaxies	12
1.2.1 Properties of Radio Galaxies	13
1.2.2 Morphology of extended radio sources	14
1.3 Synchrotron emission	17
1.4 Sky Surveys used in the present work	19
2 Motivation	21
2.1 Previous work	24
2.2 State of the art on GRGs	25
2.3 Objectives	27
2.4 Sample selection	27
3 Optical spectroscopy of GRG candidates	31
3.1 Selection criteria for the subsample to be observed	32
3.2 Methodology	33
3.3 Observations	34
3.3.1 OAN and GH 2.1m telescopes	34
3.3.2 Observations with the 10.4 m GTC telescope	35
3.3.3 Data reduction	37
3.4 Data Analysis	38
3.4.1 Spectra and redshifts	38
3.4.2 Morphology and activity	51
4 Radio observations of GRG candidates	57
4.1 Selection criteria	57
4.2 Methodology	58
4.3 Observations	59
4.4 Results	60

4.4.1	Images and their description	60
4.4.2	Estimation of equipartition parameters	80
4.5	Discussion	83
5	Results and conclusions	87
5.1	Summary of the sample properties	87
5.2	Conclusions	91
5.3	Future work	91
A	GRGs observed with optical telescopes	93
B	Previously reported GRG, Bibliography	101
	Bibliography	103