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SEVENTH FRAMEWORK PROGRAMME

1. Document information

Document name:	Publication of presented papers & presentations online from Large Conference
Type	Report
WP	3 (Science Working Group)
Authors	Daniele Dallacasa (Department of Physics and Astronomy, University of Bologna – and – Istituto di Radioastronomia – INAF)

1.1 Dissemination Level

Dissemination Level		
PU	Public	X
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Confidential, only for members of the consortium (including the Commission Services)	

1.2 Content

2. Report of the Fifth CSS-GPS Workshop

2.1 Introduction

The CSS-GPS workshop held in Rimini (IT) on May 27-29, 2015 is the fifth of a series started in 1990, with the first edition held in Dwingeloo (NL) where 45 scientists met for the first time to discuss on small radio sources: Compact Steep Spectrum (CSS) and Giga-Herz Peaked Spectrum (GPS). Subsequent workshops were in Leiden (NL, 1996, 40 participants), Kerastari (Greece, 2002, 46 participants) and Riccione (Italy, 2008, 54 participants).

In Rimini 52 scientists from 18 different countries met for a 3-day meeting and 42 oral contributions were presented.

The presentation are available online:

http://www.ira.inaf.it/meetings/cssgps2015/presentations.php

Additionally, a double issue of Astronomische Nachrichten (Astronomical Notes) has been reserved for the presentations. All the contributed papers will be reviewed by two referees. This guarantees visibility of the results of the meeting, and constitute an updated guide suitable for newcomers in the field.

SOC members:

Chris O'Dea (co-chair)	*University of Manitoba (CN)*
Daniele Dallacasa (co-chair)	*University of Bologna & IRA - INAF (IT)*
Teddy Cheung	*SSD – NRL (USA)*
Magdalena Kunert-Bajraszewska	*UMK (OL)*
Kino Motoki	*KASI (KR)*
Raffaella Morganti	*ASTRON & Kapteyn Groningen (NL)*
Aneta Siemiginowska	*CFA (USA)*
Lukasz Stawarz	*ISAS – JAXA (JP)*
Greg Taylor	*University of New Mexico (USA)*

LOC members IRA – INAF (IT):

Daniele Dallacasa (chair),
Karl-Heinz Mack,
Barbara Neri,
Matteo Stagni

2.3 Scientific Highlights

The GHz Peaked Spectrum (GPS) and Compact Steep Spectrum (CSS) radio sources are the most likely candidates for the progenitors of the large scale radio sources. They are powerful but compact radio sources whose spectra are generally simple and convex, peaking tyipically between ~1 GHz and ~100 MHz. In general, the GPS sources are entirely embedded within contained within the narrow line region (< 1 kpc) while the CSS sources are contained entirely within the host galaxy (< 15 kpc). The GPS and CSS sources provide (1) probes of the ISM of the host galaxy, (2) constraints on the physics of radio galaxy evolution, and (3) a witness to a very short period of activity of an active galactic nucleus (AGN). As the radio plasma propagates outwards through the host galaxy, it provides feedback in the form of strong shocks which may influence star formation in the galaxy and further fuelling of the AGN, and definitely influences/determines other radiative processes as observed in various bands.

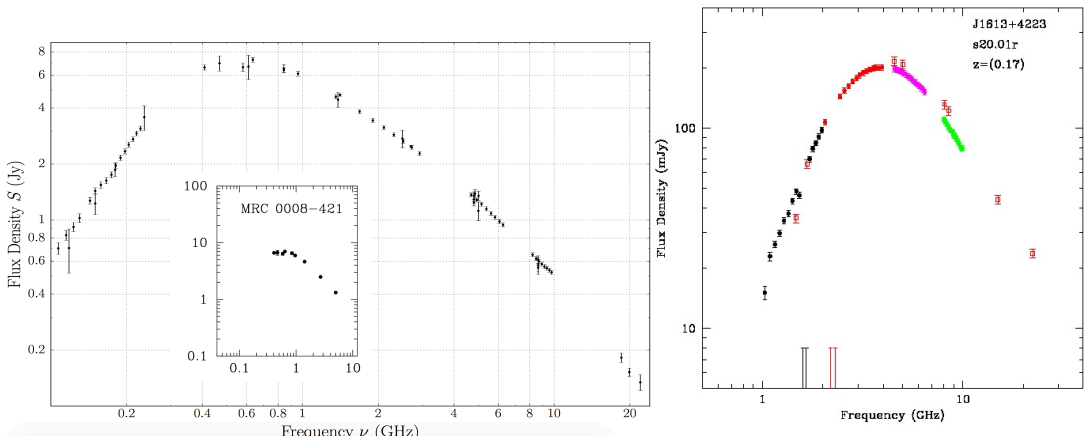
Substantial progress has been made in our understanding of GPS and CSS sources through the combination of high resolution radio, optical and UV imaging as well as IR and X-ray observations, and the availability of GeV observations with the Fermi LAT. Recent work has extended samples of sources to lower power and higher peak frequency. Dramatic improvements to existing facilities (VLA, GMRT, VLBA) and a new generation of radio telescopes (LOFAR, ALMA, and SKA precursors/pathfinders) are impacting our understanding of these interesting sources.

This workshop brought together observers from across the spectrum with theorists for an informal and stimulating exchange of ideas and results.

During the meeting several new results have been presented. It is difficult to choose a few highlights, and in general what was clear at the end is that there is a tight interplay between the start of the radio activity and what is happening in terms of accretion in the area around the supermassive black hole of the host galaxy. It is now clear that only a fraction of the population of small radio sources will manage to grow large, while many will terminate their radio activity in short times. In particular, new broadband radio spectra have been presented for the first time, making use of the new facilities like MWA and the JVLA capable of wide band coverage with a large number of independent measurements. Two examples are given in the figure below. They have been extracted from two different presentations.

It is also clear that modern/future investigations on these class of intrinsically small radio sources require a multi-band approach, connecting observations in the infrared, optical, UV X- and gamma-rays. Numerical simulations have been presented to explain the jet-medium interaction, which is likely responsible of the observed asymmetries originated by an inhomogeneous ambient medium.

Figure: left panel from Allison et al., right panel from Dallacasa & Orienti, Astronomische Nachtrichten 2015, vol. 336, in press



2.2 Programme

The scientific program was as follows:

WEDNESDAY, MAY 27, 2015		
08:50	Welcome	Dallacasa Daniele
Lifecycles and Evolution (Chair: Greg Taylor)		
09:00	Radio Properties of GPS and CSS Sources	Orienti Monica
09:40	Radio source evolution	Perucho, Manel.
10:20	Dichotomy in the population of young AGNs: optical, radio and X-ray properties	Kunert-Bajraszewska Magdalena
10:40	Phoenices of the radio sky: restarted radio galaxies	Brienza Maris
11:00	*Coffee Break*	
11:30	Sequencing the Earliest Stages of AGN Development Using The Youngest Radio Sources	Collier Jordan
11:50	New and future observations of 4C31.04 and other CSOs	Giroletti Marcello
12:10	Multifrequency VLBA observations of two CSOs	Sara Rastello
12:20	Fossil Shell Emission in Dying Radio-Loud AGNs	Kino Motoki
12:40	New Flux Density Measurements for 0108+388, 1358+624 and 2134+004 Radio Galaxies at 10.8 GHz	Yaser Hafez
12:50	*Lunch at Hotel Sporting*	
AGN Physics (Chair: Aneta Siemiginowska)		
14:00	X-ray & gamma-ray properties	Giulia Migliori
14:40	The Fermi-LAT view of young radio sources	D' Ammando Filippo
15:00	Radio properties of gamma-ray emitting CSOs	Gabanyi Krisztina
15:10	Long-term Radio and Gamma-ray Properties of 3C 84	Nagai Hiroshi
15:30	AGN accretion & disk-jet connection	Bozena Czerny
16:10	*Coffee Break*	
16:40	High Frequency Radio Properties of Central AGNs in Cluster Environments	Baek Junhyun
17:00	Search for Extreme Rotation Measures in CSS Sources	Cotton William
17:20	Probing the environment of high Rotation Measure AGNs through multifrequency radio observations	Pasetto Alice
17:40	Three megamaser AGNs: comparison of the X-ray and radio properties	Fedorova Elena
18:00	Multifrequency VLBA Polarimetry of GPS Quasar OQ172	Liu Yi
18:20	A Compact Symmetric Object with a Candidate Binary Black Hole	Taylor Greg

THURSDAY, MAY 28, 2015		
AGN Populations (Chair: Magdalena Kunert-Bajraszewska)		
09:00	Relation to other AGN types	Sadler Elaine
09:40	The new class of FR0 radio galaxies	Baldi Ranieri D.
10:00	Megahertz peaked-spectrum sources - a route to high-redshifts?	Coppejans Rocco
10:20	Radio spectra of High Frequency Peakers	Dallacasa Daniele
10:40	Are hot DOGs young radio AGN? - a high-resolution view	Frey Sandor
11:00	*Coffee Break*	
11:30	The compact radio structure of radio-loud NLS1s: the relationship to CSS sources	Gu Minfeng
11:50	Identifying High Frequency Peakers using the Korean VLBI Network	Jeong Yongjin
12:10	Searching for GPS and CSS sources at low frequencies with LOFAR	Mahony Elizabeth
12:30	The low radio frequency view of GPS and CSS sources	Callingham Joseph
12:50	*Lunch*	
Afternoon: Trip to S. Marino and Workshop Dinner		
FRIDAY, MAY 29, 2015		
Host Galaxies and ISM (Chair: Raffaella Morganti)		
09:00	Infrared Properties of GPS and CSS Sources	O'Dea Chris
09:40	Correlation between neutral and total hydrogen column densities in GPS galaxies	Ostorero Luisa
10:00	HI gas in absorption towards the central regions of radio galaxies	Chandola Yogesh
10:20	CCD imaging of 5 GPS radio galaxies	Pirya Akash
10:40	AGN: the intriguing case of GPS source PKS1718-649	Maccagni F. Marcello
11:00	*Coffee Break*	
Feedback (Chair: Motoki Kino)		
11:30	Feedback: Observations	Tadhunter Clive
12:10	Feedback: Theory	Wagner Alexander
12:50	*Lunch*	
14:30	Discovery of a neutral gas outflow in a young radio galaxy using the Australian SKA Pathfinder	Allison James
14:50	Fast outflows in broad absorption line quasars and their connection with CSS/GPS sources	Bruni Gabriele
15:10	AGN feedback in young and old radio galaxies	Labiano Alvaro
15:30	*Coffee Break*	
16:00	The nature of small jets in heavily obscured hyper-luminous quasars at z~2	Lonsdale Carol
16:20	Disruptive effect of a young jet	Morganti Raffaella
16:40	Concluding remarks (& doodle for next meeting?)	C. P. O'Dea
17:15	End of Workshop	

2.5 Participant List

The total attendance to the workshop was 52 people. The gender share was 19 women (37%) and 33 men (63%), while 21 were non-staff participants (either PhD students or PostDocs). More than 80% of the participants gave an oral presentation of her/his work, and there was a lively discussion at the end of each talk.

In alphabetical order:

1.	Allison	James	CSIRO Astronomy & Space Science (Australia)
2.	Baek	Junhyun	Yonsei University (South Korea)
3.	Baldi	Ranieri D.	Technion (Israel)
4.	Brienza	Marisa	ASTRON (the Netherlands)
5.	Bruni	Gabriele	MPIfR (Germany)
6.	Callingham	Joseph	Sydney Institute of Astronomy (SIfA) / CAASTRO (Australia)
7.	Capetti	Alessandro	INAF - Osservatorio di Torino (Italy)
8.	Chandola	Yogesh	National Astron. Observatories, Chinese Academy of Sciences (China)
9.	Collier	Jordan	University of Western Sydney (Australia)
10	Coppejans	Rocco	Radboud University Nijmegen (the Netherlands)
11	Cotton	William	NRAO (United States)
12	Cseh	David	Radboud University Nijmegen (the Netherlands)
13	Czerny	Bozena	CAMK (Poland)
14	D' Ammando	Filippo	DIFA - UniBo & IRA – INAF (Italy)
15	Dallacasa	Daniele	DIFA - UniBO & IRA – INAF (Italy)
16	Fedorova	Elena	Astronomical Observatory of Kiev National Taras (Ukraine)
17	Frey	Sandor	FOMI Satellite Geodetic Observatory (Hungary)
18	Gabanyi	Krisztina	Satellite Geodetic Observatory, FOMI (Hungary)
19	Giroletti	Marcello	IRA – INAF (Italy)
20	Gu	Minfeng	Shanghai Astronomical Observatory, CAS (China)
21	Hafez	Yaser	KACST (Saudi Arabia)
22	Jeong	Yongjin	Yonsei University (South Korea)
23	Kino	Motoki	KASI (South Korea)
24	Kunert-Bajraszewska	Magdalena	TCfA, NCU (Poland)
25	Labiano	Alvaro	ETH Zurich (Switzerland)
26	Liu	Yi	Purple Mountain Observatory, CAS (China)
27	Lonsdale	Carol	NRAO (United States)
28	Maccagni	Filippo M.	ASTRON - Kapteyn Institute (the Netherlands)
29	Mack	Karl-Heinz	IRA – INAF (Italy)
30	Mahony	Elizabeth	ASTRON (the Netherlands)
31	Migliori	Giulia	Lab. AIM, Université Paris Diderot Paris 7/CNRS/CEA-Saclay (France)
32	Morganti	Raffaella	ASTRON/Kapteyn Groningen (the Netherlands)
33	Nagai	Hiroshi	NAOJ (Japan)
34	Neri	Barbara	IRA – INAF (Italy)
35	O'Dea	Chris	University of Manitoba (Canada)
36	Orienti	Monica	IRA – INAF (Italy)
37	Ostorero	Luisa	Department of Physics - University of Torino (Italy)
38	Pasetto	Alice	MPIfR-Bonn (Germany)
39	Perucho	Manel	Universitat de València (Spain)
40	Pirya	Akash	CRyA (Mexico)
41	Polatidis	Antonis	ASTRON (the Netherlands)
42	Rastello	Sara	DIFA – UniBO (Italy)

43	Sadler	Elaine	University of Sydney/CAASTRO (Australia)
44	Siemiginowska	Aneta	CfA (United States)
45	Sohn	Bong Won	KASI (South Korea)
46	Stagni	Matteo	IRA – INAF (Italy)
47	Stanghellini	Carlo	IRA – INAF (Italy)
48	Tadhunter	Clive	University of Sheffield (United Kingdom)
49	Taylor	Greg	UNM (United States)
50	Tzioumis	Anastasios	CSIRO (Australia)
51	Venturi	Tiziana	IRA – INAF (Italy)
52	Wagner	Alexander	University of Tsukuba (Japan)

2.4 Meeting Photo

2.6 Information of the EC financial contribution

The EC contribution (RadioNet3) will be partly invested in the payment of the publication of the proceedings (approx. 3000€). A double issue of Astronomische Nachrichten (Astronomical Notes) has been reserved, and all the contributed papers will be reviewed by two referees. This guarantees visibility of the results of the meeting, and constitute an updated guide suitable for newcomers in the field.

Further financial support (EUR 1500) has been used to reduce the registration fee, in particular for non-staff participants:

- Junhyun Baek - Yonsei University (South Korea)
- Marisa **Brienza** - ASTRON (the Netherlands)
- Joseph **Callingham** Sydney Institute of Astronomy (SIfA) / CAASTRO (Australia)
- Yogesh **Chandola** National Astron. Observatories, Chinese Academy of Sciences (China)
- Filippo **D' Ammando** - DIFA - UniBo & IRA – INAF (Italy)
- Minfeng **Gu** - Shanghai Astronomical Observatory, CAS (China)
- Yongjin **Jeong** - Yonsei University (South Korea)
- Yi **Liu** - Purple Mountain Observatory, CAS (China)
- Filippo M. **Maccagni** - ASTRON - Kapteyn Institute (the Netherlands)
- Alice **Pasetto** - MPIfR-Bonn (Germany)
- Akash **Pirya** - CRyA (Mexico)
- Sara **Rastello** - DIFA – UniBO (Italy)