



Max-Planck-Institut
für Radioastronomie



VNIVERSITAT
DE VALÈNCIA

June 25, 2010

1st COST MC+WG Meeting

Eduardo Ros (Univ. Valencia & MPIfR)

SUMMARY SMBH WG MEETING (COST MP0905 WG#4)



Summary

- 20'+20' of discussion (see below)
- FRI/II by simulated relativistic flows (Keppens 20')
- X-ray and γ -ray emission in AGN (Niedzwiecki 15')
- X-ray and γ -ray observations (Kadler 15')
- AGN studied by spectral lines (Popovic 15')
- GAIA and QSOs (Antón 15')
- SMBH vicinity with radio interferometry (Lobanov 20')
- BH catalog of the nearby universe (Caramete 15')
- BBH theory (Gergely 15')
- Modeling BBH with VLBI jet trajectories (Roland 15')

Summary

- ◉ Ros 20': Introduction of topic, first exchange of ideas
 - Noticed a majority of radio astronomers in the room
 - Definition of a goal (deliverables)
 - SMBH book, specific workshops, summer school, build a solid basis and networking for next proposals (e.g., FP7&FP8 networks)
 - Importance of connection with industry
 - Gravity, visualisation software in 3C

Summary (ii)

- Keppens 20': Simulating BH-powered jets
 - FRI / II dichotomy
 - RT instabilities
- Niedzwiecki 15': X-rays and γ -rays
 - Topic for WG2 and WG4
 - Accretion models, accretion emission, jet emission at high energies
 - X-ray reflection spectrum; Fe K α line
 - Innermost stable orbit determines the cut at the iron line profile

Summary (iii)

- ◉ Kadler 15': Observing jets at high energies
 - Armada of X-ray telescopes:
 - Imaging: *Chandra*
 - Spectroscopy: *XMM, Suzaku, Chandra*
 - Hard X-rays: *INTEGRAL, Suzaku, RXTE*
 - Monitoring: *RXTE*
 - Rapid response: *Swift*
 - Broadband spectra: *Swift, Suzaku*
 - *Fermi* at gamma-rays

Summary (iv)

- Popovic 15': AGN spectral lines
 - X-rays: iron lines and dynamics of the accretion disk
 - Optical: M_{BH} determination from BLR
 - Jet emission and relationship between frequencies
- Antón 10': GAIA and QSOs
 - Large catalog of optical observations will provide good time sampling of brightness: variability studies
 - Working group on QSOs funded by ESF

Summary (v)

- Lobanov 20': Probing vicinity of BH with radio interferometry
 - Radio studies of the jet region
- Caramete 15': BH candidates in nearby universe
 - MBH catalog, data for candidates to be compiled to determine the BH mass
 - Monte-Carlo distribution simulations
 - Outreach: see <http://www.science-side.com>

Summary (vi)

- Gergely 15': SMBH binaries
 - BH (rapid) rotation by accretion, efficiency of this into electromagnetic radiation
 - Gravitational radiation, wait for LISA
 - X-shaped radio galaxies
- Roland 15': Determination of BBH characteristics from VLBI-studied jets
 - Trajectories of features in pc-scale jets are geometrically modeled as being ejected by two different BH at the jet basis

Summary (vii)

- All 30': Final discussion
 - Deliverables from the action
 - Synergies with another groups
 - Call to stay tuned (activity off-line until the meeting in Valencia)

Brainstorming

(“goals” or “deliverables”)

- (Text) book on SMBH
- Basis for deeper networking (e.g., further applications to FP7/FP8 programs)
- Organising a (training) school
 - BH powered astrophysics
- Sci. workshops
 - Multi-band view on AGN (away from colour blindness), and beyond photons
- Input for the Outreach working group (e.g., news website, see Caramete's talk)
- Synergy with parallel efforts (e.g., GAIA QSO WG)
- Development of joint efforts with industry (developments, techniques; e.g., GRAVITY)
- Public talks (attached to WG meetings)

Synergies with other WGs

● Theory

- Simulations of relativistic flows (re-scalable) (WG2)
- Modeling of μ -QSOs (WG2)
- BH formation (WG1+WG2)
- Mergers (WG1+WG2)
- Accretion (all)
- Intermediate BHs (WG2)
- Fundamental physics near BH (all)

● Observations

- μ -QSOs observations at all wavelengths (WG2)
- SMBH coalescence via PSR timing array observations (WG2)
- Observational approach to BH and GC (WG3)
- Multi-band and multi-messenger studies of BH (WG2+WG3)

Homework

- ◉ Define major scientific and operative areas of activity
- ◉ Converge on goals and deliverables
- ◉ Converge on a WG core covering all areas
- ◉ Explore contact to industry
- ◉ Prepare program for 2nd WG meeting



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WG+MC Meeting in Valencia November 15-16, 2010



June 25, 2010

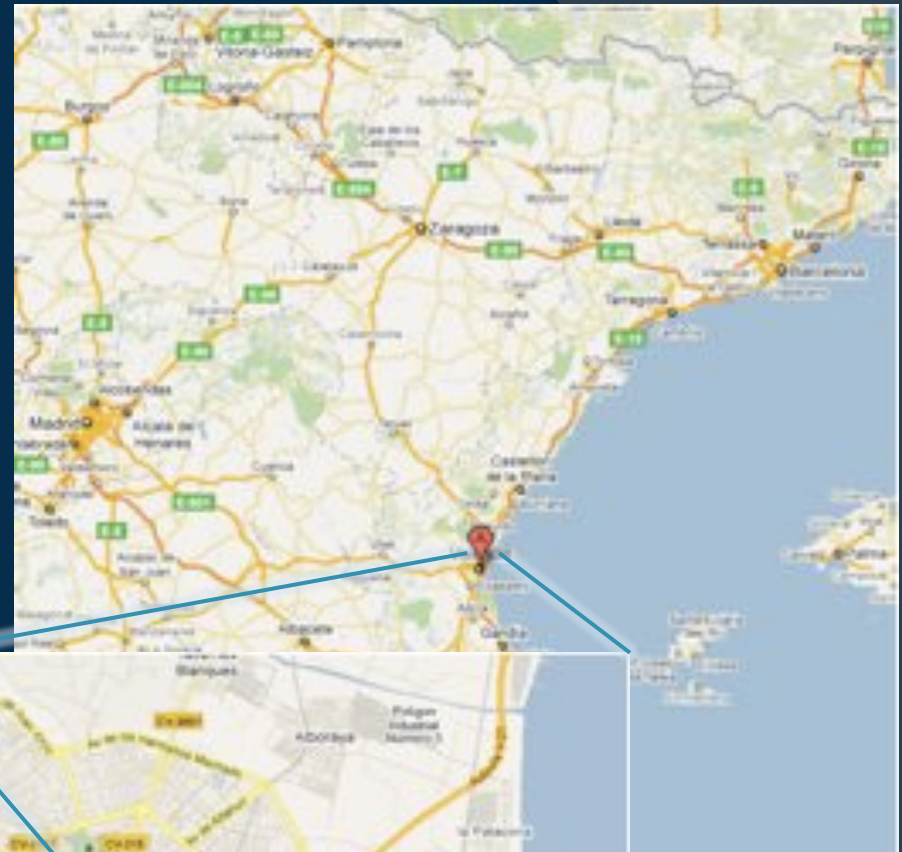
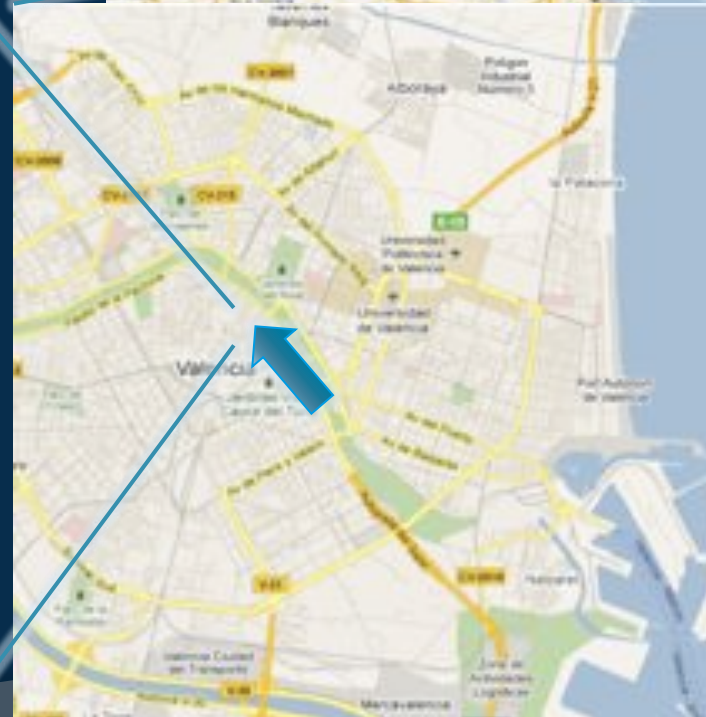
E. Ros - COST MP0905 WG#4 SMBH

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Location

- Old university building (1498) at the city centre (La Nau)
- Reachable by underground from airport within 20'



The meeting

- ◉ Valencia
 - Intl. airport reachable daily by regular and no frill airlines
 - Reachable by train from Madrid (3 hr) and Barcelona (2 ½ hr)
- ◉ Accomodation
 - University guest residence and nearby hotels (below 80€) reachable by foot
- ◉ The venue
 - Plenary sessions in Aula Magna
 - Parallel sessions in conference rooms
 - (Paella conference dinner)
 - Sessions from late morning on Monday through 16:00 on Tuesday

