

Simone Mastrogiovanni

Telephone: + 33 0777 26 11 57

Email: mastrosi@apc.in2p3.fr

Date of birth: 23/06/1991

Nationality: Italian

Gender: Male

Address: Astroparticule et Cosmologie Laboratoire
10 Rue Alice Domon et Léonie Duquet
Paris, France

Summary of the CV: I am a postdoctoral researcher working on gravitational waves astrophysics and data analysis at the Astroparticule et Cosmologie laboratorie. I am member of the LIGO and Virgo collaboration and associate of the LISA consortium. My research experience relates to data analysis and inference for gravitational waves. In particular for asymmetric spinning neutron stars and cosmology measures (e.g. Hubble constant).

Professional experience

01/01/2019-
Present | Postdoctoral fellowship at University Paris-Diderot VII Astroparticule et cosmologie.

Education

01/11/2015-
31/12/2018 | Ph.D. with honours in Astronomy, Astrophysics and Space Sciences at University of Rome La Sapienza.

Thesis title: *Advanced data analysis techniques for the detection of gravitational waves from asymmetric spinning neutron stars: an application to the first and second LIGO-Virgo observing runs*, **Supervisor:** Dr. C. Palomba, **Thesis Examiners:** Prof. K. Kokkotas, Prof. C. Sopuerta

01/10/2013-
26/10/2015 | Master of Science in Astronomy and Astrophysics with 110/110 cum laude at University of Rome Sapienza.

Thesis title: *Wide-band search of continuous gravitational waves from central compact objects in supernovae remnants*, **Supervisor:** Dr. C. Palomba, **Thesis Examiners:** Prof. L. Gualtieri

01/10/2010-
22/09/2013 | Bachelor of Science in Physics with 110/110 cum laude at University of Rome Sapienza.

Thesis title: *Gravitational Waves effect on CMB polarization*, **Supervisor:** Prof. F. Piacentini

01/09/2005-
30/07/2010 | High school diploma with 100/100 cum laude.

Publications (Paper writing team/Lead author)

- 2020 | Piccinni, O. J., Astone, P., D'Antonio, S., Frasca, S., Intini, G., La Rosa, I., Leaci, P., Mastrogiovanni, S., Miller, A., Palomba, C., “Directed search for continuous gravitational-wave signals from the Galactic Center in the Advanced LIGO second observing run”, Physical Review D, Volume 101, Issue 8, article id.082004, c=3
- 2020 | Mastrogiovanni, S., Steer, D. A., Barsuglia, M., “Joint tests of cosmology and modified gravity in light of GW170817”, eprint arXiv:2004.06102, c=0

- 2020 Mastrogiovanni, S., Steer, D., Barsuglia, M., “*Probing modified gravity theories and cosmology using gravitational-waves and associated electromagnetic counterparts*”, eprint arXiv:2004.01632, c=1
- 2020 Tsang, K. W., Ghosh, A., Samajdar, A., Chatziioannou, K., Mastrogiovanni, S., Agathos, M., Van Den Broeck, C., “*A morphology-independent search for gravitational wave echoes in data from the first and second observing runs of Advanced LIGO and Advanced Virgo*”, Physical Review D, Volume 101, Issue 6, article id.064012, c=14
- 2020 Barausse, E., Berti, E., et al., “*Prospects for Fundamental Physics with LISA*”, eprint arXiv:2001.09793, c=16
- 2019 Palomba, C., D’Antonio, S., et al., “*Direct Constraints on the Ultralight Boson Mass from Searches of Continuous Gravitational Waves*”, Physical Review Letters, Volume 123, Issue 17, id.171101, c=10
- 2019 Chassande-Mottin, E., Leyde, K., Mastrogiovanni, S., Steer, D. A., “*Gravitational wave observations, distance measurement uncertainties, and cosmology*”, Physical Review D, Volume 100, Issue 8, id.083514, c=1
- 2019 Singhal, A., Leaci, P., et al., “*A resampling algorithm to detect continuous gravitational-wave signals from neutron stars in binary systems*”, Classical and Quantum Gravity, Volume 36, Issue 20, article id. 205015 (2019)., c=0
- 2019 Miller, A. L., Astone, P., et al., “*How effective is machine learning to detect long transient gravitational waves from neutron stars in a real search?*”, Physical Review D, Volume 100, Issue 6, id.062005, c=2
- 2019 Gray, R., Magaña Hernandez, I., et al., “*Cosmological Inference using Gravitational Wave Standard Sirens: A Mock Data Challenge*”, eprint arXiv:1908.06050, c=9
- 2019 Piccinni, O. J., Astone, P., D’Antonio, S., Frasca, S., Intini, G., Leaci, P., Mastrogiovanni, S., Miller, A., Palomba, C., Singhal, A., “*A new data analysis framework for the search of continuous gravitational wave signals*”, Classical and Quantum Gravity, Volume 36, Issue 1, article id. 015008 (2019)., c=6
- 2018 D’Antonio, S., Palomba, C., et al., “*Semicoherent analysis method to search for continuous gravitational waves emitted by ultralight boson clouds around spinning black holes*”, Physical Review D, Volume 98, Issue 10, id.103017, c=7
- 2018 Miller, A., Astone, P., et al., “*Method to search for long duration gravitational wave transients from isolated neutron stars using the generalized frequency-Hough transform*”, Physical Review D, Volume 98, Issue 10, id.102004, c=10
- 2018 Mastrogiovanni, S., Astone, P., et al., “*Phase decomposition of the template metric for continuous gravitational-wave searches*”, Physical Review D, Volume 98, Issue 10, id.102003, c=0
- 2017 Mastrogiovanni, S., Astone, P., D’Antonio, S., Frasca, S., Intini, G., Leaci, P., Miller, A., Palomba, C., Piccinni, O. J., Singhal, A., “*An improved algorithm for narrow-band searches of continuous gravitational waves*”, Classical and Quantum Gravity, Volume 34, Issue 13, article id. 135007 (2017)., c=7
- 2017 Leaci, P., Astone, P., D’Antonio, S., Frasca, S., Palomba, C., Piccinni, O., Mastrogiovanni, S., “*Novel directed search strategy to detect continuous gravitational waves from neutron stars in low- and high-eccentricity binary systems*”, Physical Review D, Volume 95, Issue 12, id.122001, c=6
- 2017 Mastrogiovanni, S., “*Prospects of continuous gravitational waves from Fermi LAT sources*”, Il Nuovo Cimento C, Volume 40, Issue 3, article id.131, 6 pp., c=0

Collaboration publications (10 Top cited)

- 2017 Abbott, B. P., Abbott, R., et al., “*GW170817: Observation of Gravitational Waves from a Binary Neutron Star Inspiral*”, Physical Review Letters, Volume 119, Issue 16, id.161101, c=3195
- 2016 Abbott, B. P., Abbott, R., et al., “*GW151226: Observation of Gravitational Waves from a 22-Solar-Mass Binary Black Hole Coalescence*”, Physical Review Letters, Volume 116, Issue 24, id.241103, c=2033
- 2017 Abbott, B. P., Abbott, R., et al., “*GW170104: Observation of a 50-Solar-Mass Binary Black Hole Coalescence at Redshift 0.2*”, Physical Review Letters, Volume 118, Issue 22, id.221101, c=1474
- 2017 Abbott, B. P., Abbott, R., et al., “*Multi-messenger Observations of a Binary Neutron Star Merger*”, The Astrophysical Journal Letters, Volume 848, Issue 2, article id. L12, 59 pp. (2017)., c=1374
- 2017 Abbott, B. P., Abbott, R., et al., “*Gravitational Waves and Gamma-Rays from a Binary Neutron Star Merger: GW170817 and GRB 170817A*”, The Astrophysical Journal Letters, Volume 848, Issue 2, article id. L13, 27 pp. (2017)., c=1214
- 2017 Abbott, B. P., Abbott, R., et al., “*GW170814: A Three-Detector Observation of Gravitational Waves from a Binary Black Hole Coalescence*”, Physical Review Letters, Volume 119, Issue 14, id.141101, c=1134
- 2019 Abbott, B. P., Abbott, R., et al., “*GWTC-1: A Gravitational-Wave Transient Catalog of Compact Binary Mergers Observed by LIGO and Virgo during the First and Second Observing Runs*”, Physical Review X, Volume 9, Issue 3, id.031040, c=836
- 2016 Abbott, B. P., Abbott, R., et al., “*Binary Black Hole Mergers in the First Advanced LIGO Observing Run*”, Physical Review X, Volume 6, Issue 4, id.041015, c=736
- 2017 Abbott, B. P., Abbott, R., et al., “*GW170608: Observation of a 19 Solar-mass Binary Black Hole Coalescence*”, The Astrophysical Journal Letters, Volume 851, Issue 2, article id. L35, 11 pp. (2017)., c=699
- 2018 Abbott, B. P., Abbott, R., et al., “*Prospects for observing and localizing gravitational-wave transients with Advanced LIGO, Advanced Virgo and KAGRA*”, Living Reviews in Relativity, Volume 21, Issue 1, article id. 3, 57 pp., c=623

Research expeditions

- 03/05/2019-05/06/2019 Visitor at the cosmology group of Geneva University
- 01/02/2019-15/03/2019 Visitor at Nikhef institution, Netherlands
- 17/05/2018-24/05/2018 Visitor at the University of Glasgow, UK
- 01/2017-04/2017 Visiting research student at California Institute of Technology, USA

Conference support and organization

26/05/2020- 29/05/2020	Organizer for “Gravitational waves open data workshop 3”, Remote workshop.
16/12/2019	Organizer of the workshop “Paris Center for cosmological physics - Planning gender equality actions.”
25/03/2019- 29/03/2019	Chair of the of Astrophysics session at “Congrès Des Doctorants - STEP’UP doctoral school”, in Paris - France.
08/04/2019- 10/04/2019	Local support for “Gravitational waves open data workshop 2”, Paris - France.
18/05/2017	Organizer of the workshop “Gravitational waves workshop” with the French embassy in Italy, in Cascina, Virgo, Italy.

Prices and Awards

2019	Honorable mention Braccini Thesis prize
2018	Award best poster presentation - GEMMA workshop
2016	Award “Tito Maiani” 2016 for Master thesis in physics - Accademia dei Lincei
2015	Admitted to excellence courses in Astronomy and Astrophysics for Master students
2011	Admitted to excellence courses in Physics department for Bachelor Student

Funding

2018	Grant (2.5k€) European COST Action-CA16104 on gravitational waves, black holes and fundamental physics. Detecting the gravitational waves echoes in LIGO and Virgo data, Host institution: Nikhef, Amsterdam for the period Feb 1st - Mar 15th 2019.
2017	Grant (1.0k€) “Avvio alla ricerca” from Sapienza University of Rome for the project: Exploring Markov Chain Monte-Carlo techniques for gravitational waves detection.
2017	Grant (13k\$) “LIGO visitor program“ from the LIGO collaboration: Visiting research period at the California Institute of Technology working on characterization of gravitational waves candidates.
2016	Grant (1.5k€) “Avvio alla ricerca” from Sapienza University of Rome for the project: Development of GPU-based algorithm for continuous gravitational waves searches.
2016	Grant from the French embassy in Italy (1.0k€) for the organization of a scientific workshop between French and Italian researchers. Title of the workshop: Gravitational waves workshop

Fellowships

2015-2018	Astronomy, Astrophysics and space science PhD fellowship.
2011-2015	Laziodisu Scholarship for Bachelor/Master studies.

Supervising and monitoring

14/04/2020- 14/07/2020	Supervisor M1 thesis Margaux Abello, “Study of the determination of H_0 using gravitational waves emitted by compact objects, in a nonzero curvature Universe”.
2019	Internal LIGO-Virgo reviewer for the cosmology working group
2019	Internal LIGO-Virgo reviewer for the Pulsars working group

Outreach activities

5/06/2020	Invited talk at high School in Paris Area.
?	AGGIUNGERE WORKSHOPS FRONTIERS
2019	The discovery of Gravitational waves, 3 posters for INFN CC3m.
05/2019-Present	Paris Center for Cosmological Physics online demonstrator on gravitational wave physics for the European project Frontiers. "Finding black-holes in a chirp: how to understand the first gravitational-wave detection".
2019-Present	Preparation of an open webinar with the Paris Center for Cosmological Physics on Gravitational wave astronomy - "Tempetes Gravitationelles"
2016-Present	Translation in Italian of of LIGO Virgo Science summary for the outreach group.
19/08/2019	Science summary for the LIGO/Viro collaboration "Hunting for gravitational waves from known pulsars relaxing the spin assumption with LIGO O2 data".
09/11/2018	Gravitational wave day organizer - face-to-face with the researchers
04/06/018	Science summary for the LIGO/Viro collaboration "Hunting for Gravitational Waves from Known Pulsars within a Narrow Range of Candidate Frequencies"
02/2016	Outreach talk at "Stendhal Highschool", Civitavecchia, Italy.

Teaching and work experience

15/06/2020-19/06/2020	Seminars to STEP UP PhD students on gravitational-wave data analysis.
2018	Tutor for the course "Laboratorio di Calcolo" for first year Bachelor of Science, University of Rome, "La Sapienza".
2018	Italian abilitation for high school teaching (24CFU course).
2017-2018	Mathematical Analysis tutor for first year Bachelor of Science students, University of Rome "La Sapienza".
2016-2017	Laboratory assistant for High School students, University of Rome "La Sapienza".
2014-2015	Laboratory assistant for Bachelor's students (mechanics and circuits), University of Rome "La Sapienza".
2011-2014	Librarian in physics department, University of Rome "La Sapienza".

Schools and Courses

28-01/05-06/2018	Participant Lake Como school of advanced studies - Waves on the lake Como, Italy.
28-10/05-06/2017	Participant School of gravitational waves for cosmology and astrophysics Benasque, Spain.
24-28/10/2016	5th GraWiton school Rome.
21-23/06/2016	Course in Programming paradigms for hybrid architectures (GPU), at Cineca Rome.
18/05/2017	Course in Programming paradigms for hybrid architectures (GPU), at Cineca Rome.

Conferences contributive talks and posters

13/11/2019	Assemblée générale du Groupement de recherche ondes gravitationnelles. Invited talk to the cosmology working group.
10-11/10/2019	Assemblée générale du Groupement de recherche ondes gravitationnelles. Contributive talk.

10-11/10/2019	Assemblée générale du Groupement de recherche ondes gravitationnelles. Contributive talk.
02-05/09/2019	LIGO Virgo meeting Warsaw. Contributive talk
07-12/07/2019	Amaldi13/GR22. Contributive talk.
16-18/05/2019	Biannual workshop of the Laboratorie of Astropaticule et Cosmologie - Paris Diderot
14-17/04/2019	Virgo week collaboration meeting. Contributive talk.
24-26/09/2018	Astrophysics workshop for Rome PhD students. Contributive talk.
04-07/06/2018	GEMMA workshop Lecce, Italy. Contributive talk and poster presentation.
16-17/04/2018	Virgo week collaboration meeting. Contributive talk.
19-22/03/2018	LIGO Virgo collaboration meeting, Sonoma, California, USA. Contributive talk and poster presentation.
25-27/09/2017	Astrophysics workshop for Rome PhD students. Contributive talk.
28-02/08-09/2017	LIGO Virgo collaboration meeting, Geneve, Switzerland. Contributive and plenary talk.
19-22/06/2017	New frontiers in gravitational-wave astrophysics, Rome. Contributive talk.
13-16/03/2017	LIGO Virgo collaboration meeting, Pasadena, California, USA. Contributive talk.
18-21/10/2016	SciNeGHE workshop, Pisa, Italy. Contributive talk.
21-23/09/2016	Astrophysics workshop for Rome PhD students. Contributive talk.
20/09/2016	String Theory and Inflation Workshop, Rome.
29-01/08-09/2016	LIGO Virgo collaboration meeting, Glasgow, UK. Contributive talk.
27-29/06/2016	Virgo week collaboration meeting. Contributive talk.
02-04/05/2016	Virgo week collaboration meeting. Contributive talk.
14-18/03/2016	LIGO Virgo collaboration meeting, Pasadena, California, USA. Remote contributive talk.
03-05/02/2016	Virgo week collaboration meeting. Contributive talk.
12-18/07/2015	Marcel Grossmann meeting XIV Workshop participant in Rome.
01-04/07/2015	Virgo week collaboration meeting. Contributive talk.
14-18/07/2014	Astro-GR/VESF Workshop participant in Monte Porzio Catone.

Personal skills

Language	Italian: Mother tongue. English: B1.
Programing	C, C++, Python, Fortran90, Matlab, CUDA C (beginner).
Software	LATEX, OpenOffice, Microsoft Office, QtiPlot, Origin.
Operating system	Linux, Windows, MacOSx.