

## PERSONAL INFORMATION

Simone Mastrogiovanni

## CALL

## EDUCATION AND TRAINING

2015 -Present

Ph.D. student with fellowship in Astronomy, Astrophysics and Space Sciences at University of Rome "Sapienza"

Joint PhD University of Rome "La Sapienza" and "Tor Vergata". The PhD project consists in the development of data analysis pipelines able to detect continuous gravitational waves from gamma-ray sources identified by the LAT-Fermi satellite.

Jan 2017 – Apr 2017

Visiting Research student at California Institute of Technology

Pasadena, California, funded by the LIGO visitor program. Develop and empirical method able to estimate a noise-only distribution in presence of non-gaussian data.

February-June 2015

Excellence courses for master's students

Courses subjects: Bayesian approach for data analysis-*Prof.G. D'Agostini*

2013–2015

Master of Science degree in Astronomy and Astrophysics with 110/110 cum laudae

University of Rome La Sapienza, Rome. Graduated on 26th October with a thesis "Wide-band search of continuous gravitational wave from central compact objects in supernovae remnants", Supervisors Dr.C.Palomba. In this thesis I have developed a fully coherent algorithm able to explore a narrow region in the parameter space for continuous gravitational waves searches. Moreover I have applied it in a example case, gravitational waves search from a central compact object in a supernova remnant.

February-June 2015

Excellence courses for bachelor's students

- Hyperbolic differential equation-*Prof.A.Terracina*
- Extension of analytical mechanics-*Prof.M.Testa*
- CMB's observable and experiments-*Prof.P.De Bernardis*  
A first approach to Relativistic quantum mechanics- *Prof.M.Testa*

2010–2013

Bachelor degree in physics with 110/110 cum laudae

University of Rome La Sapienza, Rome. Graduated on 1st October 2013 with a thesis " Gravitational Waves effect on CMB polarization",Supervisors Prof.Francesco Piacentini. In this bachelor thesis I have reviewed the effect of gravitational waves on the polarization of the CMB.

2005–2010

Graduated from high school with 100/100 cum laudae

Liceo Scientifico Tecnologico, Civitavecchia



## SHORT AUTHORS LIST PUBLICATIONS

- P. Leaci, P. Astone, S. D'Antonio, S. Frasca, C. Palomba, O. Piccinni, and S. Mastrogiovanni. Novel directed search strategy to detect continuous gravitational waves from neutron stars in low- and high-eccentricity binary systems. *Physical review D*, 95(12):122001, June 2017
- S. Walsh, M. Pitkin, M. Oliver, S. D'Antonio, V. Dergachev, A. Królak, P. Astone, M. Bejger, M. Di Giovanni, O. Dorosh, S. Frasca, P. Leaci, S. Mastrogiovanni, A. Miller, C. Palomba, M. A. Papa, O. J. Piccinni, K. Riles, O. Sauter, and A. M. Sintes. Comparison of methods for the detection of gravitational waves from unknown neutron stars. *Physical review D*, 94(12):124010, December 2016
- S. Mastrogiovanni, P. Astone, S. D'Antonio, S. Frasca, G. Intini, P. Leaci, A. Miller, C. Palomba, O. J. Piccinni, and A. Singhal. An improved algorithm for narrow-band searches of continuous gravitational waves. *Classical and Quantum Gravity*, 34(13):135007, July 2017

## WORK EXPERIENCE

- 2016–2017 Tutor "Progetto Lauree scientifiche", University Of Rome La Sapienza, Rome, Place obtained winnig collaboration fellowship of physics department
- 2014–2015 Assitant at physics laboratory for bachelor's students (mechanics,circuits lab), University Of Rome La Saplenza, Rome. Place obtained winnig collaboration fellowship of physics department
- 2011–2014 Librarian in physics department. University Of Rome La Sapienza. Place obtained winnig collaboration fellowship of physics department.

## SCHOOLS AND COURSES

- 28 May – 10 Jun 2017 School of gravitational waves for cosmology and astrophysics Benasque, Spain
- 24-28 October 2016 5th GraWiton school Rome
- 21-23 June 2016 couse in Programming paradigms for hybrid architectures (GPU), at Cineca Rome

## WORKSHOPS AND MEETINGS

- 28 June – 2 September June 2017 **LIGO Virgo collaboration meeting** Geneve, Switzerland
- 19 June – 22 June 2017 **New frontiers in gravitational-wave astrophysics** Workshop in Rome, Italy
- 18 May 2017 **Gravitational waves workshop** Cascina as organizer. Italy
- 13-16 March 2017 **LVC meeting** Pasadena, California, USA
- 18-21 October 2016 **SciNeGHE workshop** Speaker "Prospects of cointuous gravitational waves searches from Fermi-LAT sources"
- 21-23 September 2016 **Astrophysics workshop for PhD students** Speaker "Continuous gravitational waves searches from Fermi-LAT sources"
- 20 September **String Theory and Inflation** Workshop participant in Rome Univeristy of Tor Vergata
- 29 August-1 September 2016 **LSC-Virgo collaboration meeting Glasgow** Speaker at CW f2f "O1 Narrow-band searches results"
- 14-18 March 2016 **LSC-Virgo collaboration meeting Pasadena** Remote speaker at CW f2f "Improvmnt and preliminary results of Narrow-band search pipeline with O1 data"
- 31-4 August-September **LSC-Virgo collaboration meeting** "Extension of the 5-vectors method to wider band searches"
- 12-18 July 2015 **Marcel Grossmann meeting XIV** Workshop participant in Rome
- August 2014 **Astro-GR/VESF** Workshop participant in Monte Porzio Catone

**FELLOWSHIPS AND FUNDS**

- 2017 Funds for the project: *Exploring Markov Chain Monte-Carlo techniques for gravitational waves detection*, "Progetto avvio alla ricerca" Sapienza University of Rome.
- 2017 LIGO visit program fellowship for the project: *Towards a detection scheme for targeted CW searches*, "Progetto avvio alla ricerca" Sapienza University of Rome.
- 2016-2017 Collaboration fellowship, tutor at "Progetto Lauree scientifiche"
- 2016 Funds for the project: *Development of GPU-based algorithm for continuous gravitational waves searches*, "Progetto avvio alla ricerca" Sapienza University of Rome.
- 2016 French embassy in Italy-funds to organize a day workshop with french researchers
- 2014-2015 Collaboration fellowship in as laboratory assistant for bachelor's students
- 2014-2015 Laziodisu Scholarship
- 2013-2014 Collaboration fellowship in department's library
- 2012-2013 Collaboration fellowship in department's library
- 2012-2013 Laziodisu Scholarship
- 2011-2012 Collaboration fellowship in department's library
- 2011-2012 Laziodisu Scholarship

**AWARDS**

- 2016 Award "Tito Maiani" 2016 for master thesis in physics- Accademia dei Lincei
- 2015 Admitted to excellence courses in Astronomy-Astrophysics for Masters students
- 2011 Admitted to excellence courses in physics department for bachelor's student

**MISCELLANEA**

- 27-29 June **Virgo week speaker:** "Actuator's Transfer function for calibration"
- 2-4 May 2016 **Virgo week speaker:** "Narrow-band searches for Crab and Vela pulsar with advanced detectors"
- 3-5 February **Virgo week speaker:** " Search for CW from unidentified Fermi source"
- 1-4 July 2015 **Virgo week speaker:** "Improving performances of CW narrow-band searches"
- July 2010 Language skill programme in Cheltenham attended with Inlingua School

**PERSONAL SKILLS**

Mother tongue Italian  
 FCE achieved in 2010, PET achieved 2007

Other languages	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	B1	B1	B1	B1	B1

Levels: A1/A2: Basic user - B1/B2: Independent user - C1/C2: Proficient user  
Common European Framework of Reference (CEF) level

Programming languages C,C++,Pascal,Fortran90,Matlab, CUDA C (beginner)

Programs  $\LaTeX$ , OpenOffice, Microsoft Office, QtiPlot, Origin

operating systems Linux, Windows, MacOSx

Driving licence B

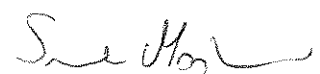
GRADES

Exam	CFU	Grade
Analysis	9	23/30
Linear algebra	9	29/30
Calculus laboratory	6	30/30
Mechanics	12	30/30
Mechanics laboratory	12	30/30 L
Chemistry	6	30/30
Analysis II	9	30/30
Thermodynamics	9	30/30
Computational laboratory	6	30/30 L
Analytical mechanics and special relativity	6	28/30
Electromagnetism	12	30/30
Circuits laboratory	6	26/30
mathematical methods and models	12	20/30
Quantum mechanics	9	27/30
Signals laboratory	9	29/30
Statistical mechanics	6	25/30
Introduction to astrophysics	6	30/30
Introduction to general relativity	6	27/30
Optics	9	29/30
Nuclear and subnuclear physics	6	25/30
Structure of matter	6	30/30

Exam	CFU	Grade
Theoretical Astrophysics	6	29/30
Astrophysical plasmas and processes	6	29/30
Experimental Gravitation	6	28/30
General Relativity(BH,NS,WD)	6	28/30
Stellar Astrophysics	6	30/30
Physical Cosmology	6	30/30 cum laudae
High energy Astrophysics	6	30/30 cum laudae
Experimental Astrophysics	12	30/30
Astrophysics in primordial universe	6	30/30
Theoretical Cosmology	6	30/30
Superior Physics	6	27/30
Advanced Computational laboratory	6	30/30

## Collaboration papers

- [1] J. Aasi, B. P. Abbott, R. Abbott, T. D. Abbott, M. R. Abernathy, F. Acernese, K. Ackley, C. Adams, T. Adams, P. Addesso, and et al. First low frequency all-sky search for continuous gravitational wave signals. *Physical review D*, 93(4):042007, February 2016.
- [2] B. P. Abbott, R. Abbott, T. D. Abbott, M. R. Abernathy, F. Acernese, K. Ackley, C. Adams, T. Adams, P. Addesso, R. X. Adhikari, and et al. Binary Black Hole Mergers in the First Advanced LIGO Observing Run. *Physical Review X*, 6(4):041015, October 2016.
- [3] B. P. Abbott, R. Abbott, T. D. Abbott, M. R. Abernathy, F. Acernese, K. Ackley, C. Adams, T. Adams, P. Addesso, R. X. Adhikari, and et al. Comprehensive all-sky search for periodic gravitational waves in the sixth science run LIGO data. *Physical review D*, 94(4):042002, August 2016.
- [4] B. P. Abbott, R. Abbott, T. D. Abbott, M. R. Abernathy, F. Acernese, K. Ackley, C. Adams, T. Adams, P. Addesso, R. X. Adhikari, and et al. Directly comparing GW150914 with numerical solutions of Einstein's equations for binary black hole coalescence. *Physical review D*, 94(6):064035, September 2016.
- [5] B. P. Abbott, R. Abbott, T. D. Abbott, M. R. Abernathy, F. Acernese, K. Ackley, C. Adams, T. Adams, P. Addesso, R. X. Adhikari, and et al. First targeted search for gravitational-wave bursts from core-collapse supernovae in data of first-generation laser interferometer detectors. *Physical review D*, 94(10):102001, November 2016.
- [6] B. P. Abbott, R. Abbott, T. D. Abbott, M. R. Abernathy, F. Acernese, K. Ackley, C. Adams, T. Adams, P. Addesso, R. X. Adhikari, and et al. GW151226: Observation of Gravitational Waves from a 22-Solar-Mass Binary Black Hole Coalescence. *Physical Review Letters*, 116(24):241103, June 2016.
- [7] B. P. Abbott, R. Abbott, T. D. Abbott, M. R. Abernathy, F. Acernese, K. Ackley, C. Adams, T. Adams, P. Addesso, R. X. Adhikari, and et al. Improved Analysis of GW150914 Using a Fully Spin-Precessing Waveform Model. *Physical Review X*, 6(4):041014, October 2016.
- [8] B. P. Abbott, R. Abbott, T. D. Abbott, M. R. Abernathy, F. Acernese, K. Ackley, C. Adams, T. Adams, P. Addesso, R. X. Adhikari, and et al. Results of the deepest all-sky survey for continuous gravitational waves on LIGO S6 data running on the Einstein@Home volunteer distributed computing project. *Physical review D*, 94(10):102002, November 2016.
- [9] B. P. Abbott, R. Abbott, T. D. Abbott, M. R. Abernathy, F. Acernese, K. Ackley, C. Adams, T. Adams, P. Addesso, R. X. Adhikari, and et al. Search for transient gravitational waves in coincidence with short-duration radio transients during 2007-2013. *Physical review D*, 93(12):122008, June 2016.
- [10] B. P. Abbott, R. Abbott, T. D. Abbott, M. R. Abernathy, F. Acernese, K. Ackley, C. Adams, T. Adams, P. Addesso, R. X. Adhikari, and et al. Upper Limits on the Rates of Binary Neutron Star and Neutron Star-Black Hole Mergers from Advanced LIGO's First Observing Run. *The Astrophysical Journal letters*, 832:L21, December 2016.
- [11] B. P. Abbott, R. Abbott, T. D. Abbott, M. R. Abernathy, F. Acernese, K. Ackley, C. Adams, T. Adams, P. Addesso, R. X. Adhikari, and et al. All-sky search for short gravitational-wave bursts in the first Advanced LIGO run. *Physical review D*, 95(4):042003, February 2017.
- [12] B. P. Abbott, R. Abbott, T. D. Abbott, M. R. Abernathy, F. Acernese, K. Ackley, C. Adams, T. Adams, P. Addesso, R. X. Adhikari, and et al. Directional Limits on Persistent Gravitational Waves from Advanced LIGO's First Observing Run. *Physical Review Letters*, 118(12):121102, March 2017.
- [13] B. P. Abbott, R. Abbott, T. D. Abbott, M. R. Abernathy, F. Acernese, K. Ackley, C. Adams, T. Adams, P. Addesso, R. X. Adhikari, and et al. Effects of waveform model systematics on the interpretation of GW150914. *Classical and Quantum Gravity*, 34(10):104002, May 2017.
- [14] B. P. Abbott, R. Abbott, T. D. Abbott, M. R. Abernathy, F. Acernese, K. Ackley, C. Adams, T. Adams, P. Addesso, R. X. Adhikari, and et al. First Search for Gravitational Waves from Known Pulsars with Advanced LIGO. *The Astrophysical Journal*, 839:12, April 2017.
- [15] B. P. Abbott, R. Abbott, T. D. Abbott, M. R. Abernathy, F. Acernese, K. Ackley, C. Adams, T. Adams, P. Addesso, R. X. Adhikari, and et al. Search for continuous gravitational waves from neutron stars in globular cluster NGC 6544. *Physical review D*, 95(8):082005, April 2017.



- [16] B. P. Abbott, R. Abbott, T. D. Abbott, M. R. Abernathy, F. Acernese, K. Ackley, C. Adams, T. Adams, P. Addesso, R. X. Adhikari, and et al. Search for Gravitational Waves Associated with Gamma-Ray Bursts during the First Advanced LIGO Observing Run and Implications for the Origin of GRB 150906B. *The Astrophysical Journal*, 841:89, June 2017.
- [17] B. P. Abbott, R. Abbott, T. D. Abbott, M. R. Abernathy, F. Acernese, K. Ackley, C. Adams, T. Adams, P. Addesso, R. X. Adhikari, and et al. The basic physics of the binary black hole merger GW150914. *Annalen der Physik*, 529:1600209, January 2017.
- [18] B. P. Abbott, R. Abbott, T. D. Abbott, M. R. Abernathy, F. Acernese, K. Ackley, C. Adams, T. Adams, P. Addesso, R. X. Adhikari, and et al. Upper Limits on the Stochastic Gravitational-Wave Background from Advanced LIGO's First Observing Run. *Physical Review Letters*, 118(12):121101, March 2017.
- [19] B. P. Abbott, R. Abbott, T. D. Abbott, F. Acernese, K. Ackley, C. Adams, T. Adams, P. Addesso, R. X. Adhikari, V. B. Adya, and et al. GW170104: Observation of a 50-Solar-Mass Binary Black Hole Coalescence at Redshift 0.2. *Physical Review Letters*, 118(22):221101, June 2017.
- [20] B. P. Abbott, R. Abbott, T. D. Abbott, F. Acernese, K. Ackley, C. Adams, T. Adams, P. Addesso, R. X. Adhikari, V. B. Adya, and et al. Search for intermediate mass black hole binaries in the first observing run of Advanced LIGO. *Physical review D*, 96(2):022001, July 2017.
- [21] A. Albert, M. André, M. Anghinolfi, G. Anton, M. Ardid, J.-J. Aubert, T. Avgitas, B. Baret, J. Barrios-Martí, S. Basa, and et al. Search for high-energy neutrinos from gravitational wave event GW151226 and candidate LVT151012 with ANTARES and IceCube. *Physical review D*, 96(2):022005, July 2017.
- [22] P. Leaci, P. Astone, S. D'Antonio, S. Frasca, C. Palomba, O. Piccinni, and S. Mastrogiovanni. Novel directed search strategy to detect continuous gravitational waves from neutron stars in low- and high-eccentricity binary systems. *Physical review D*, 95(12):122001, June 2017.
- [23] LIGO Scientific Collaboration, Virgo Collaboration, B. P. Abbott, R. Abbott, T. D. Abbott, F. Acernese, K. Ackley, C. Adams, T. Adams, P. Addesso, and et al. All-sky Search for Periodic Gravitational Waves in the O1 LIGO Data. *ArXiv e-prints*, July 2017.
- [24] S. Mastrogiovanni, P. Astone, S. D'Antonio, S. Frasca, G. Intini, P. Leaci, A. Miller, C. Palomba, O. J. Piccinni, and A. Singhal. An improved algorithm for narrow-band searches of continuous gravitational waves. *Classical and Quantum Gravity*, 34(13):135007, July 2017.
- [25] The LIGO Scientific Collaboration, the Virgo Collaboration, B. P. Abbott, R. Abbott, T. D. Abbott, F. Acernese, K. Ackley, C. Adams, T. Adams, P. Addesso, and et al. First low-frequency Einstein@Home all-sky search for continuous gravitational waves in Advanced LIGO data. *ArXiv e-prints*, July 2017.
- [26] The LIGO Scientific Collaboration, the Virgo Collaboration, B. P. Abbott, R. Abbott, T. D. Abbott, F. Acernese, K. Ackley, C. Adams, T. Adams, P. Addesso, and et al. Search for gravitational waves from Scorpius X-1 in the first Advanced LIGO observing run with a hidden Markov model. *ArXiv e-prints*, April 2017.
- [27] The LIGO Scientific Collaboration, the Virgo Collaboration, B. P. Abbott, R. Abbott, T. D. Abbott, F. Acernese, K. Ackley, C. Adams, T. Adams, P. Addesso, and et al. Upper Limits on Gravitational Waves from Scorpius X-1 from a Model-Based Cross-Correlation Search in Advanced LIGO Data. *ArXiv e-prints*, June 2017.
- [28] S. Walsh, M. Pitkin, M. Oliver, S. D'Antonio, V. Dergachev, A. Królak, P. Astone, M. Bejger, M. Di Giovanni, O. Dorosh, S. Frasca, P. Leaci, S. Mastrogiovanni, A. Miller, C. Palomba, M. A. Papa, O. J. Piccinni, K. Riles, O. Sauter, and A. M. Sintes. Comparison of methods for the detection of gravitational waves from unknown neutron stars. *Physical review D*, 94(12):124010, December 2016.

