

# Curriculum Vitae of Professor Marica Branchesi

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## PERSONAL INFORMATION

Family name, First name: Branchesi Marica

Date of birth: 07/03/1977

Work Address: Gran Sasso Science Institute (GSSI)

Viale Francesco Crispi, 7, 67100 L'Aquila AQ

## EDUCATION

- 2006:** Ph.D. in Astronomy obtained on April 19<sup>th</sup> 2006, Thesis title: “*X-ray and Radio Evolution of Clusters and Cluster Galaxies*” at the ALMA Mater Studiorum Università di Bologna. Supervisors: Senior Researcher I.M. Gioia, Full Professor R. Fanti and Associate Professor C. Fanti.
- 2004:** Visiting student at the National Radio Astronomy Observatory, Socorro, NM, USA (2 months) Supervisor: Professor R. Perley
- 2003-2006:** Ph.D. student at the ALMA Mater Studiorum Università di Bologna. Research carried out at Istituto di Radio Astronomia, Istituto Nazionale di Astrofisica (INAF) Bologna.
- 2002:** Master Degree in Astronomy obtained on July 19<sup>th</sup> 2002 at the ALMA Mater Studiorum Università di Bologna. Thesis Title: “*Polarization Study of Subgalactic Radio-Sources*” Mark: 110/110 cum laude. Supervisors: Full Professor R. Fanti and Associate Professor C. Fanti.

## EMPLOYMENTS

### Current position

**2021(1<sup>st</sup> June)-now:** Full Professor in Astronomy and Astrophysics at the GSSI

### Previous positions

**2020(1<sup>st</sup> August)-2021:** Associate Professor in Astronomy and Astrophysics at the GSSI

**2017(1<sup>st</sup> August)-2020:** Assistant Professor in Astronomy and Astrophysics at the GSSI

**2019:** Abilitation for full professor in Astronomy and Astrophysics

**2018:** Abilitation for full professor in Experimental Physics

**2013 –2017:** Temporary Research Staff (Ricercatore RTDa) at the Università degli Studi di Urbino “Carlo Bo”

**Maternity leave:** from June to November 2015, and from December 2016 to May 2017

**2013:** Post-Doctoral Research Scientist at the Università degli Studi di Urbino “Carlo Bo”

**2012:** Invited Long-Term Visitor at the Division of Physics, Mathematics and Astronomy at The California Institute of Technology (Pasadena, August-December 2012)

**2009-2012:** Post-Doctoral Research Scientist at the Università degli Studi di Urbino “Carlo Bo”

**2006-2009:** Post-Doctoral Research Scientist at the Istituto di Radioastronomia (Bologna)-Istituto Nazionale di Astrofisica (INAF)

## INSTITUTIONAL RESPONSIBILITIES

### Institutional offices in Italian University and Research Institutions

**2020-now** President of the Scientific Council of Istituto Nazionale di Astrofisica

**2018-2020** Member of "Senato Accademico" of the GSSI

**2018-now** Member of " Collegio Docenti " of the GSSI

**2017-now** Leader of the INFN GSGC (Gran Sasso Science Institute Gruppo Collegato ai Laboratori Nazionali del Gran Sasso-INFN) Virgo group.

### Institutional offices in International Institutions

**2020-now** Member of the Scientific Advisory Committee of the Perimeter Institute

**2020-now** Member of the Scientific Advisory Committee of the Astroparticle Physics European Consortium (APPEC). Member of the writing team of the APPEC mid-term roadmap.

**2020-now** Member of the panel writing the **ASTRONET 2021 roadmap** for the Universe

**2019-now** Member of **DESY Astroparticle Physics Committee**

**2020-now** Member of the Classical and Quantum Gravity editorial board

**2017-2021** **President of the International Astronomer Union (IAU) commission D1 - “Gravitational Wave Astrophysics”** under Division D High Energy Phenomena and **member of the Steering Committee** of Division D

**2017-2021** Member of the **Gravitational Wave International Committee (GWIC)** as IAU Commission D1 Representative. **Member of the GWIC roadmap writing team** ("Gravitational-Wave Physics and Astronomy in the 2020s and 2030s" recently accepted in Nature Reviews Physics).

**2015-2016** **Co-proposer and Vice-president** (elected) of the International Astronomer Union **IAU commission on “Gravitational Wave Astrophysics”**

### Institutional offices in Research Collaborations

**2021-now** **Chair** of the Einstein Telescope Observation Science Board

**2020-now** Member of the Einstein Telescope Steering Committee

**2019-now** **Group leader** of the GSSI group within the Virgo collaboration, and **member of the Virgo Steering Committee**.

**2019-now Coordinator** of Working Group “Synergies with future facilities” for **THESEUS**

**2019-2021** Member of the team developing the **Einstein Telescope** science cases for the **ESFRI** (European Strategy Forum on Research Infrastructures), and responsible for the multi-messenger part (Maggiore et al. 2020, JCAP). Member of the group of three scientists who defended the ET project during the European ESFRI hearing in front of the evaluation panel. Einstein Telescope has been included in the ESFRI Roadmap 2021.

**2018-Now Founding Member** of the **ENGRAVE** (Electro-magnetic counterparts of gravitational waves at the Very Large Telescope) consortium and currently **member of the Governing Council**.

**2015-now Founding Member** of **GRAWITA** - GRAVitational Wave Inaf TeAm team projects

**2014-2018 Co-chair of the LIGO Scientific Collaboration and Virgo (LVC) EM-follow up team**

**Member of three selected LVC committees (5-6 members):**

**3<sup>rd</sup> Committee (2013-2017):** mandate to define the criteria to sign Memorandum of Understanding (MoUs) between LIGO/Virgo and partner astronomers for the advanced era EM follow up and to review the MoU applications

**2<sup>nd</sup> Committee (2012-2013):** mandate to identify “the features of a minimal set of EM observing resources to carry out follow-ups of GW triggers in the advanced detector era”

**1<sup>st</sup> Committee (2012-2013):** mandate to define “the observing plan for the advanced detector era EM follow-up”

**2009-2012 Project Co-chief:** Image analysis for Zadko, TAROT and QUEST telescopes in the LIGO/Virgo “GW-EM follow-up” program (2009-2010)

### Institutional offices in competitive projects

**2022-now: Principal Investigator** of the PRIN 2020KB33TP: “Multimessenger astronomy in the Einstein Telescope Era (METE)”

**2020-now: Leader of the Joint Research Activity Work Package 12** “Multimessenger Astronomy Exploitation and Tools” of the project “Integrated Activities for the High Energy Astrophysics Domain (AHEAD2020)” in the Horizon2020 Research & Innovation. The WP12 includes 12 European and International Institutions (GSSI, INAF, INFN, CNRS/APC, CEA/IRFU, EGO, SRON/NIKHEF, DESY, University of Bath, University of Leicester, Max-Planck-Gesellschaft, NASA/MSFC and GSFC). **Member** of the AHEAD2020 **Executive Committee** and **Consortium Board**.

**2019-Now: Associated Investigator** and **GSSI Research Unit coordinator** in the PRIN 20179ZF5KS: “The new frontier of Multi-Messenger Astrophysics: follow-up of electromagnetic transient counterparts of gravitational wave sources.”

**2013-2016 National coordinator** of the FIRB project (RBF12PM1F) research about “New perspectives on the violent Universe: unveiling the physics of compact objects with joint observations of gravitational waves and electromagnetic radiation”. Team, formed by 3 researchers, 5 postdoctoral fellows at the University of Urbino, Pisa and INAF-Osservatorio di Padova.

### Commissions of trust

**Speaker** (selected among the about 1200 members of the LIGO and Virgo collaborations) **in the panel of 6 scientists**, who announced the first observation of gravitational waves from the binary system of neutron stars (GW170817) and its electromagnetic counterpart at the NSF international press-release

**LVC Reviewer:** for the LVC/Swift Follow-up project (2009-2010), for MoU applications to participate in the EM-follow-up program, for many LVC papers (collaboration and short author-list), and for the EM-follow up papers written by astronomers within the LVC EM follow-up program

**Referee** for Astronomy & Astrophysics, Astrophysical Journal, Astrophysical Journal Letter, MNRAS,

Physical Review D, Physical Review-X, Publications of the Astronomical Society of Australia (PASA) and “Journal of Physics: Conference Series”

**Selection committee** of the two major prizes in the field of gravitational wave for outstanding Ph.D. theses: the GWIC (Gravitational Wave International Committee) Thesis Prize and the Stefano Braccini Thesis Prize

**Evaluator for funding project applications** (ERC, VENI for The Netherlands Organisation for Scientific Research and programme P.R.I.M.E., "Postdoctoral Researchers International Mobility Experience" - German Academic Exchange Service DAAD)

## COMPETITIVE PROJECTS

**2022-now: Principal Investigator** of the PRIN 2020KB33TP: “Multimessenger astronomy in the Einstein Telescope Era (METE)” funded by MUR with 796 keuro

**2020-now: Co-proposer** of the project Integrated Activities for the High Energy Astrophysics Domain (AHEAD2020 – PI L. Piro) and **leader of the Joint Research Activity Work Package 12** “Multimessenger Astronomy Exploitation and Tools”. AHEAD2020 is funded by Horizon2020 Research & Innovation actions with 10 Meuro (the WP12 with 1.3 Meuro). **Member** of the AHEAD2020 **Executive Committee** and **Consortium Board**.

**2019-Now: Associated Investigator** in the PRIN 20179ZF5KS: “The new frontier of Multi-Messenger Astrophysics: follow-up of electromagnetic transient counterparts of gravitational wave sources.” (PI Enrico Cappellaro) funded by MiUR with 796 keuro.

**2019-now Participant** in the project “Probing Gamma Ray Burst central remnant and jet structure Bando Analisi Dati, Teoria e Simulazioni” Bando Analisi Dati, Teoria e Simulazione ASI-INAF n. 2017-14-H.0 PI (Giulia Stratta) funded with 22 keuro.

**2018-2019: Participant** in the project for “Understanding the x-ray variable and Transient Sky (ULtraS)” Bando analisi dati di alta energia - Astrofisica delle alte energie e fisica astroparticellare - ASI-INAF N. 2017-14-H.0 PI Andrea De Luca funded with 80 keuro

**2017-now: Participant** in the COST Action CA16214 PHAROS “The multi-messenger physics and astrophysics of neutron stars” (PI Nanda Rea) and **task leader** (elected) of the Working Group 4 “Magnetic field formation, evolution, (in)stability and neutron star population study”

**2016-now: Partner Investigator** in the project for the “AUSTRALIAN RESEARCH COUNCIL Centre of Excellence for Gravitational Wave Discovery” (PI Prof Matthew Bailes) funded with \$31.3 million

**2015-2016: Participant** in the INAF project “Gravitational Wave Astronomy with the first detections of adLIGO and adVIRGO experiments.” (PI Enzo Brocato) funded with 110k EUR by INAF

**2013-2016: Principal Investigator** in the FIRB research project (RBFR12PM1F): “New perspectives on the violent Universe: unveiling the physics of compact objects with joint observations of gravitational waves and electromagnetic radiation”. **Grant for excellent young researchers** (success rate < 3%) **funded with 958.49k EUR by the Italian Ministry of Education, University and Research. Duration 44 months from 21/03/2013 to 21/11/2016** (among which 5 of extension for maternity leave). Co-Is: Dr. M. Mapelli (INAF Osservatorio Astronomico di Padova), Dr. M. Razzano (Pisa University)

**2014-2015: Participant** in the FIGARONET project (PI Michel Boer) funded with 50k EUR by the Agence Nationale de la Recherche

**2012-2013: VESF (Virgo Ego Scientific Forum) fellowship grant.** PI of the Project the “Electromagnetic follow-up of gravitational wave candidates in the Advanced Virgo era” (25k EUR)

## MAIN RESEARCH INTERESTS (list)

- multi-messenger, gravitational wave (GW) and electromagnetic (EM), astronomy
- observational and theoretical studies on compact object (neutron star and black hole)
- observations and modeling of gamma-ray bursts, kilonovae and core-collapse supernovae
- observational cosmology with supernovae, surface brightness fluctuations, and gravitational waves
- observational strategies to detect the EM counterpart of GW signals
- image analysis techniques to detect “transient events” in wide-field EM images
- extragalactic observational and interpretive astrophysics concerning studies on clusters of galaxies and Active Galactic Nuclei

## MEMBERSHIPS OF SCIENTIFIC SOCIETIES

**2019-now:** Member of the European Astronomical Society

**2019-now:** Member of the Società Italiana della Fisica

**2018-now:** Member of the Società Italiana di Relatività Generale e Fisica della Gravitazione (SIGRAV)

**2009-now:** Scientific association with INFN (Istituto Nazionale di Fisica Nucleare)

**2013-now:** Scientific association with INAF (Istituto Nazionale di Astrofisica)

**2009-now:** Member of EGO (the European Gravitational Observatory)

**2009-now:** Member of the Virgo collaboration

**2009-now:** Participation in the LIGO Scientific Collaboration and Virgo collaborations

**2009-now** Member of the International Astronomical Union (IAU)

## AWARDS

**2020: Occhialini Prize** has been awarded to Marica Branchesi: “For her vision in bridging the observational astronomy and experimental gravitational wave physics that anticipated the majestic discovery of GW170817, when a flash of multicolor light was emitted concurrently with the long searched gravitational wave signal”.

**Premio "Lacchini"** UAI 2020 for outreach activities

**2019: Copernicus Medal** of the Alma Mater University of Bologna. The award ceremony took place during the traditional ceremony of Alma Mater Research Doctors. For the first time the University of Bologna has created five medals representing five great personalities of all times who have brought the fame to the University to the world: Francesco Petrarca, Niccolò Copernico, Accursio, Guglielmo Marconi and Laura Bassi.

**Beller Lectureship** from the American Physical Society. The Beller Lectureship provides funding and support to bring distinguished physicists from abroad to present invited talks at APS meetings. I was nominated by Forum on International Physics. APS April Meeting 2019 (Denver, Colorado)

**2018: “SIGRAV Prize” 2018:** prize from Società Italiana di Relatività Generale e Fisica della Gravitazione to young researchers who carried out researches of particular interest in the field. Awarding ceremony during SIGRAV 2018 (9–15 September 2018, Santa Margherita di Pula, Cagliari, Italy)

Named in **Time magazine's list of the 100 most influential people of 2018**

**Premio Picchio d'oro 2018**, massimo riconoscimento della Regione Marche. Un premio al merito per il ruolo ricoperto nella scoperta delle onde gravitazionali. Tra le motivazioni del riconoscimento, il contributo dato a “un dialogo internazionale che ha fatto progredire la civiltà umana verso nuove frontiere” e l’essere diventata “pioniera di una nuova era dell’astronomia, incoraggiando il valore delle diversità, superando divari e steccati di genere”.

**Premio “Oltre l’Orizzonte” XIII Edizione**, manifestazione insignita della medaglia di rappresentanza del Presidente della Repubblica Sergio Mattarella. Cerimonia Osservatorio Astronomico di Capodimonte

Urbino City Council award of "**Ambassador of Urbino in the world**" for her fundamental contribution to the extraordinary detection of gravitational waves by participating in the international research group Ligo / Virgo.

**2017 Scientist in Nature's 10**, the annual list of ten people who mattered in science in 2017. M. Branchesi was selected by the prestigious journal Nature and defined as "Merger maker: an astronomer helped scientists make the most of a historic gravitational-wave event"  
<https://www.nature.com/immersive/d41586-017-07763-y/index.html>

**2016: Special breakthrough prize** in fundamental physics awarded for detection of gravitational waves 100 years after Albert Einstein predicted their existence as one of 1012 contributors to the experiment, who will each equally share \$2 million.

## **PUBLICATIONS STATISTICS**

**244 publications** in international peer reviewed journals

Total citations: 58140 as of 09/09/2022 – **h-index: 83** (data from ADS: <http://adsabs.harvard.edu>)

## **ORGANIZATION OF SCIENTIFIC MEETINGS**

### **Summary**

Member of the **Scientific Organizing Committee** of 40 international workshops, conferences, symposia, and 4 international astrophysical schools.

## **ORAL PRESENTATIONS**

### **Summary**

- **70 ORAL PRESENTATIONS** among which **61 INVITED and 2 SOLICITED TALKS** at National and International conferences and workshops

- **24 INVITED SEMINARS and COLLOQUIA** at international Institutes and Universities and