Curriculum Vitae – Alessandra Mastrobuono-Battisti

PERSONAL INFORMATION

Family name, First name: Mastrobuono Battisti, Alessandra
Researcher unique identifier(s): ORCID: 0000-0002-2386-9142; SCOPUS ID: 35174814200
Nationality: Italian; **Family status:** Married, 2 children
Web site: http://alessandramb.github.io/

CURRENT POSITION

2021 – **Marie Curie Fellow. Project: THESYS.** GEPI, Observatoire de Paris, France
Group Leader: 2 PhD students and 2 MSc students, co-funded through my MSCA fellowship

Maternity leave (Nov 2022 – March 2023)

PREVIOUS POSITIONS

2020 – 2021 **Researcher**, Lund Observatory, Lund, Sweden
Maternity leave (Feb 2020 – Oct 2020)

2015 – 2019 **Independent Research Fellow (MPIA prize fellowship),** Galaxies and Cosmology Department, Max-Planck-Instiut für Astronomie, Heidelberg, Germany

2012 – 2015 **Postdoctoral Fellow (Lady Davis Fellowship),**
Physics Department, Technion-Israel Institute of Technology, Haifa, Israel

EDUCATION

2012 **PhD in Astronomy.** Grade: Excellent
Department of Physics and Astrophysics, Sapienza University of Rome, Italy
Supervisor: Prof. Roberto Capuzzo-Dolcetta

2008 **Master's Degree in Astronomy and Astrophysics.** Grade: 110/110 summa cum laude
Department of Physics and Astrophysics, Sapienza University of Rome, Italy

RESEARCH AND CAREER HIGHLIGHTS

My research interests focus on the field of **stellar dynamics, studied from a theoretical and numerical point of view**. For my studies, I use **GPU-accelerated direct *N*-body codes** – including my own GPU code "*NBSymple*", which I developed from scratch. *NBSymple* is a powerful, efficient and accurate code, parallelised on multiple CPUs and graphic processing units (GPUs), which allows to numerically simulate dense stellar systems in galactic potentials. With these codes, I model the evolution through cosmic time of the most ancient, dense and massive star clusters found in galaxies: globular and nuclear clusters. *My main research lines and their output, including leadership of projects and student supervision, are:*

Previous research highlight: the origin of the Galactic nucleus

Thanks to my work on galactic nuclei, I have been the **PI** of one project ("Globular and nuclear clusters across the Universe", MPIA prize fellowship) and led several collaborations in various EU countries and in Israel. My models provide an explanation for the origin of the dense stellar clusters observed in most galactic nuclei, around the central supermassive black hole. On this research line, I have supervised **3 PhD students**, with **3 refereed publications**. I have been the **PI** of 3 **computing time proposals** (1 in Italy and 2 in Sweden) and **coordinator of the relative projects**. I have been the Co-I of a successful GEMINI observing proposal (PI: Anja Feldmeier-Krause, MPIA).

Main current research: evolution of globular clusters and their stellar populations

My models have had a direct impact on interpreting data taken by groundbreaking instruments, such as Gaia, HST and VLT, retrieving the origin of stellar populations in many Galactic globular clusters. My work has been the key to understanding the formation of the peculiar cluster M54 using VLT data in a collaboration with the Max Planck Society in Germany. I am the **PI** of the **H2020 MSCA project THESYS,** I currently lead a team of four early-career researchers at GEPI (2 co-supervised PhD students and 2 MSc students under my sole supervision). I actively collaborate with high-profile groups in France (Obs. de Paris, Obs. de Nice, Obs. de Strasbourg), Germany (MPIA, AIP), Italy (INAF, University of Padova, Bologna and Rome), US (STScI), Israel (Technion)]. I have been a Co-I for 2 observing proposals (**HST Cycle 28**, PI: Annalisa Calamida, STScI and CHFT, PI: David Valls Gabaud, Obs. de Paris). In 2012, I have been the **PI on H2020 HPC-Europa2 project** which allowed

me to visit GEPI and obtain unlimited GPU hours for 3 months, on GENCI/CINES resources. I have been the **PI** of an awarded computing time proposal (in Cyprus). I have co-supervised **1 PhD thesis** in the past (2 publications) and I am currently co-supervising **3 PhD students** (at GEPI and INAF, Italy; 2 publications, and 1 submitted), 2 MSc students, and one BSc project (1 publication).

Broadening my interests: the formation of the Moon

On planetary scales, I solved the long-standing Earth-Moon composition similarity issue (Mastrobuono-Battisti et al. 2015, **Nature).** This work, which is the result of a collaboration that I led in France and Israel, has been followed by multiple (50+) press releases and a further lead author paper on MNRAS. I have been awarded four national prizes in acknowledgement of the importance of this result.

Equal gender/Outreach

I have been approached by writers to contribute to two books on outstanding women in science and technology. Regarding outreach, I have delivered 11 public outreach seminars/lectures (including a **TED**x **talk**, with a broad variety of audiences. I have contributed to more than 50 interviews on radio, TV and press.

FELLOWSHIPS AND GRANTS

I have been able to attract funding for more than half a million EUR. In the following, I am listing my main fellowships, funded as the PI of the respective projects.

2021 – 2023 **Horizon 2020 MSCA Individual Fellowship (200,000EUR, THESYS, grant agreement No 895174).** Host institution: CNRS and GEPI, Observatoire de Paris, France.

2015 – 2019 **MPIA Prize Fellowship (250000EUR)**. Host institution: Galaxy and Cosmology Department, Max-Planck-Institut-für-Astronomie, Heidelberg, Germany.

2012 – 2014 **Lady Davis Fellowship (18000 USD)**. Host institution: Technion, Israel.

2012 **HPC-Europa2 grant (3000 EUR, 50000 CPU hours and unlimited GPU hours for 3 months)**. Host institution: GEPI – Observatoire de Paris.

2008 – 2011 **PhD Scholarship (60000EUR)**. Host institution: Sapienza University of Rome.

PRIZES AND AWARDS

1) **"Immagine"** prize for the outstanding scientific career, awarded by "Associazione Immagine", Latina, IT. Annual award for outstanding scientists (10/12/16).
2) **"Lievito 2016"** prize, awarded by "Associazione Lievito", Latina, IT. Annual award for outstanding scientists (25/04/16).
3) **"Latina va in Scena"** prize for the outstanding scientific achievements. Award from Latina County in Italy (28/06/15).
4) **Formal recognition (**Italian: "Menzione d'Onore"**)** from the city of Pontinia (25/05/15).

SUCCESSFUL COMPUTING AND OBSERVING TIME PROPOSALS

2021 **PI** of a SNIC computing proposal, granted resources 120,000 GPU/CPU hours on Swedish supercomputers. Project: "The origin of the Galactic nucleus".

2020 **Co-I** for the **Hubble Space Telescope proposal Cycle 28** observing proposal "Digging into the mystery of the Galactic globular clusters M22 and NGC1851" (PI: Annalisa Calamida, STScI).

2017 **Co-PI** for a CINECA proposal, granted resources: 200000CPU/GPU hours (for 9 months). Project: "Formation of nuclear clusters through mergers of a realistic population of globular clusters".

2014 **Co-PI** for a LinkSCEEM/Cy–Tera proposal, granted resources: 12000 GPU hours available for 12 months. Project: "Formation and evolution of dense stellar clusters".

2014 **Co-I** for a GEMINI proposal, "The Milky Way nuclear star cluster as a benchmark for the structure and build-up of galactic nuclei" (PI: Anja Feldmeier-Krause, ESO).

2011 **Co-I** for a CFHT proposal, "The extended tidal tails of Palomar 14" (PI: Prof. D. Valls-Gabaud, Observatoire de Paris).

PUBLICATION SUMMARY: 6133 citations (ADS, as of 12/2023)

- ***h*-index: 28**;
- **70** publications in peer-reviewed, high impact-factor journals:

- **11** as the **first author** including: 1 **Nature** paper as the first author; **19** as the **second or third author (including 9 as the supervisor of PhD students)**.
- 2 white papers and 14 conference proceedings (10 refereed, 8 as the first author).

FIVE BEST PUBLICATIONS

This is a list of papers which I deem most representative of the kind of work that I intend to do in the future. Such publications illustrate the variety of research I have conducted (chemical composition of the Moon, globular clusters, nuclear clusters, stellar populations, etc.). In the list, I have included 2 of my lead author publications (among 11). I also include a high-impact publication to which I provided a major contribution (number [2]) and two important papers produced by a PhD student I supervised ([4, 5], among 9 papers published as a PhD student co-supervisor). Papers published without my Thesis supervisor are indicated with (*). For each publication I provide a brief description of my contribution and the main scientific result. The number of citations mentioned has ADS as its source.

1. (*) **Mastrobuono-Battisti, A.**, Perets, H. B. & Raymond S. N., 2015, "A primordial origin for the composition similarity between the Earth and the Moon", **Nature**, 520, 212: *I initiated the collaboration and devised/directed a project that, through the analysis of one of the most extensive solar system formation models, proves that the similarity between the Earth and Moon is a natural consequence of a late giant impact. This result solved the long-standing composition similarity challenge.*
2. Antonini F., Capuzzo-Dolcetta R., **Mastrobuono-Battisti, A.** & Merritt D., 2012, "Dissipationless Formation and Evolution of the Milky Way Nuclear Star Cluster", **ApJ**, 750, 111: *This is the first paper that addressed the problem of the formation of our Galactic nucleus while providing a link between globular clusters and the supermassive black hole. The senior scientists in this paper agreed upon listing the authors in alphabetical order. However, I was the main contributor, the idea was mine and I performed most of the work.*
3. (*) **Mastrobuono-Battisti, A.** & Perets, H. B., 2013, "Evolution of second-generation stars in stellar disks of globular and nuclear clusters: ω Centauri as a test case", **ApJ**, 779, 85: *This is the first of a series of papers resulting from my project on the origin of multiple populations in globular clusters. With my models, I developed a new and potentially groundbreaking method to use the current cluster characteristics to reconstruct their primordial and still unknown star formation history.*
4. (*) **Mastrobuono-Battisti, A.**, Perets, H. B. & Loeb, A., 2014, "Effects of Intermediate Mass Black Holes on Nuclear Star Clusters", **ApJ**, 796, 40: *This paper sets a milestone in the understanding of the effects of the presence of intermediate-mass black holes in globular clusters and at the centre of galaxies. My analysis provides a new way of detecting these objects through their indirect effects (e.g. on the tidal disruption event rate or on the emission of gravitational waves).*
5. (*) Tsatsi, A., **Mastrobuono-Battisti, A.**, et al., 2017, "On the rotation of nuclear star clusters formed by cluster inspirals", **MNRAS**, 464, 3720: *This work was part of the PhD Thesis of S. Tsatsi. Exploiting my models, we found that the inspiral and merger of globular clusters around the central supermassive black hole can produce a nuclear cluster equal to the one in the Galaxy. I supervised Tsatsi throughout the project, which stemmed from my original idea and I contributed a considerable amount of work in the development phase.*

PUBLIC LECTURES, TALKS AND SEMINARS SUMMARY

- 9 invited talks at conferences (since 2014);
- 13 public outreach seminars/lectures (including a **TED^{x} talk**, since 2015).
- 20 invited colloquia/seminars at international institutes (since 2012),
- More than 50 press interviews, including some on gender equality in STEM.
- 29 contributed talks at conferences (since 2010).

INVITED CONFERENCE TALKS *(9 talks)*

2023 **Invited Talk.** "A multi-wavelength view on globular clusters near and far: from JWST to the ELT", Sexten, Italy, 3-7/07. **Title:** "Modelling the origin of multiple populations in globular clusters."

2023 **Invited Talk.** "Phases Of Galactic Evolution As Traced By Stellar Populations And Star Clusters", Sexten, Italy, 26-30/06. **Title:** "Modelling the origin of multiple populations in globular clusters."

2022 **Invited review talk**. "The Puzzles of the Galactic Centre", Heidelberg, Germany, 5-7/09. **Title:** "The Galactic nuclear star cluster and supermassive black hole formation and co-evolution: where do we stand?". During the same conference, **I led a discussion section** as an expert on nuclear star cluster formation and evolution.

2019 **Invited talk**. "Uncovering the Physics of Formation of Globular Clusters and their Host Galaxies", KITP, Santa Barbara, US, 11-14/05, postponed due to the Covid19 outbreak. **Title:** "The dynamics of merging globular clusters".

2018 **Invited talk.** "Multiple populations in Globular clusters", Sexten, Italy, 09-13/07. **Title:** "On the merger origin of metallicity spreads in globular clusters".

2018 **Invited talk.** MPIA Galaxy and Cosmology Retreat 2018, Lobbach, Germany, 14-16/05. **Title:** "The chemo-dynamical evolution of the Solar System".

2017 **Invited review talk**. "The amazing life of stars", Cefalù, Italy, 04-08/09. **Title:** "The formation and evolution of Nuclear star clusters".

2014 **Invited review talk**. "Growth and evolution of the Milky Way's nuclear star cluster and its central black hole", Alajar, Spain, 20-28/09. **Title:** "The formation and evolution of Nuclear star clusters".

2014 **Invited talk.** "Stellar *N*-body Dynamics", Sexten, Italy, 08-12/09. **Title:** "The formation and evolution of Nuclear star clusters".

TEACHING EXPERIENCE

2023 **Master's internship lecturer:** Lecturer for a 1st year MSc internship project. Title of the project: "Dynamical evolution and fate of globular clusters in the Milky Way". One student, 40h (2nd semester of the 2022-2023 Academic Year).

2022 **Lab insertion module lecturer**: "Dynamical evolution and fate of globular clusters in the Milky Way", 1st year MSc. Two students, 40h (1st semester).

2021 **Lecturer**, 1st year MSc, "High-Energy Astrophysics", Lund Observatory (Sweden). 15 students, 15h.

2020 **Lecturer**, 1st year MSc, "Stellar Structure and Evolution", Lund Observatory (Sweden). 15 students, 3h;

2009 – 2010 **Teaching Assistant**, 3rd year BSc, *Numerical Methods in Astronomy*, Department of Physics and Astrophysics, Sapienza University of Rome, Italy. 50 students, 35h

SUPERVISION OF STUDENTS

7 PhD students co-supervised or mentored, 2 Master's students and 1 Bachelor student supervised.

2022 – ongoing

1. **Co-supervisor** (30%, with P. Di Matteo, GEPI): **PhD student Salvatore Ferrone**. Project: "The tidal evolution of Galactic globular clusters". **One paper published:** Ferrone, S. Di Matteo, P., **Mastrobuono-Battisti, A.** et al., 2023, **A&A**, 673, A44.

(1) **Supervisor** (100%; graduated: 04/10/2022, GEPI): **Master's student Lisa Delit**. Project: "Globular cluster disruption and the link with the Galactic nucleus" (funded through my grant).

(2) **Co-supervisor** (50%, with A. Milone, Padova Uni.; graduated 12/10/2022): **Master student Mariasole Maglione**. Project: "Multiple populations in globular clusters", GEPI, Paris.

2021 – ongoing

(1) **Co-supervisor** (30%, with P. Di Matteo, GEPI): **PhD student Giulia Pagnini**. Project: "The early and late evolution of our Galaxy through the lens of globular clusters". **One paper published:** Pagnini, G., Di Matteo, P., Khoperskov, S., **Mastrobuono-Battisti, A**. et al., 2023, **A&A**, 673, A86.

2021 – 2023

(2) **Co-supervisor** (25%, with F. Calura, INAF-Bologna): **PhD student Elena Lacchin**. Project: "Mass loss in Magellanic Clouds Globular Clusters". **One paper published:** Lacchin, E., Calura, F., Vesperini, E., **Mastrobuono-Battisti, A.**, 2022, **MNRAS**, 517, 1171.

2017 – 2021
Co-supervisor (45%, with G. van de Ven and A. Sippel; graduated on 06/07/2021): **PhD student Francisco Aros**. Project: "Intermediate mass black holes in globular clusters", MPIA, Germany. Graduated in July 2021 (magna cum laude). **Two published papers:**

1. Aros, F., Sippel, A., **Mastrobuono-Battisti, A.**, et al., 2020, **MNRAS**, 499, 4646
2. Aros, F., Sippel, A., **Mastrobuono-Battisti, A.**, et al., 2021, **MNRAS**, 508, 4385.

***2017 – 2018**:* **Supervisor** (100%, graduated on 19/06/2018): Bachelor student **Robin Herlan**. Project: "Dark matter density profiles in dwarf galaxies: the case of Sagittarius", MPIA, Heidelberg, Germany. One paper published: Herlan, **Mastrobuono-Battisti**, Neumayer**,** MNRAS", **MNRAS**, 523, 2721.

2012 – 2017: Mentoring and co-supervision of **3 PhD students:**
(1) **Federico Abbate** (20%, Milan University, Italy, graduated in 2019). **One paper published:** Abbate, **Mastrobuono-Battisti** et al. 2018, MNRAS, 473, 927.

(2) **Athanasia Tsatsi** (30%, MPIA, Germany, graduated in 2016). **One paper published:** Tsatsi, **Mastrobuono-Battisti** et al. 2017, MNRAS, 464, 3720;

(3) **Danor Aharon** (10%, Technion, Israel, graduated in 2016). **One paper published:** Aharon, **Mastrobuono-Battisti** et al. 2016, ApJ, 823, 137.

ORGANISATION OF SCIENTIFIC MEETINGS

2023 **Co-Chair of the SOC and Co-I of the proposal** for the **EAS Special Session** "Understanding the connection between nuclear star clusters, black holes and galaxy evolution: merging observations and simulations", **Kraków, Poland** (10-14/07/2023).

2021 **SOC member** for the conference "Multiple stellar populations in the next decade" (to be held in Padova, Italy, delayed due to the covid outbreak, https://indico.ict.inaf.it/event/994/)

2019 **SOC member and Co-I of the proposal** for the **EWASS special session** "The dynamics of stellar clusters", Lyon (24-28/06/2019).

2018 **Principal organiser, chair of the SOC and PI of the funding proposal (15000 EUR granted)** for the conference "Survival of dense stellar clusters in the Milky Way system", 85 participants, Heidelberg, Germany (19-23/11/2018).

2017 **(1) SOC member, discussion moderator** and **LOC co-chair** for the meeting: "Piercing the Galactic darkness", 70 participants, Heidelberg, Germany (16-19/10/2017). **(2) Principal organiser**, **SOC** and **LOC** member for the MPIA Galaxy and Cosmology Department annual retreat, 90 participants, Schöntal, Germany (22-24/05/2017). **(3) SOC member and discussion moderator** for the meeting: "The exciting lives of galactic nuclei", 40 participants, Ringberg, Germany (27/02-03/03/2017).

INSTITUTIONAL RESPONSIBILITIES

2023 – Member of the **"Lunar Gravitational Wave Antenna"** collaboration.

2022 – Member of the **ESO/ELT MOSAIC Science Team**.

2021 – **Co-organiser** of the "Paris Observatory Joint Galaxies and Cosmology Seminar": https://ggsapi.obspm.fr/seminars/.

2021 **Referee and committee member** for the examination and evaluation of a **Master's Thesis and a Bachelor's Thesis** (Lund, Sweden). I refereed the Theses and I have been a panel member for the Thesis' final evaluation.

2021 Member of the International Astronomical Union.

2018 – Member of **Gaia DPAC consortium (CU6 group)**, responsible for the **validation of the spectroscopic data in globular clusters**.

2016 – 2021 **Weekly group meetings organiser** and **chair** (Sweden and Germany).

2016 – Member of several **committees for the selection of future postdocs, PhD students, and internship students** (MPIA, Germany and Obs. de Paris).

PUBLIC LECTURES (13 lectures)

2022 Teachers Training lecture: "Moon Camp", https://www.esero.it/eventi/, Napoli, Italy (11/11). This is a lecture organised within the educational ESA/ASI program *ESERO Italia,* created to support learning and teaching of science and technology.

2022 Public lecture on the Galactic Centre, supermassive black holes, ETH *"A journey to the Galactic Centre: the Milky Way's nucleus and its supermassive black hole"*, Florence, Italy (05/07).

2021 Astronomisk Ungdom Space Research School lecture for high school students, Lund, Sweden (27/07)

2019 Public lecture on the origin of the Universe and of the solar system, Latina, Italy (26/10)

2019 Public talk on the origin of the Moon and of the solar system, Florence, Italy (23/07)

2019 Lectio Magistralis for the 50th Anniversary of Apollo 11 Moon Landing, Latina, Italy (20/07)

2018 **TED^{x} Castelfranco talk**: "Scientific puzzles: the formation of the Moon", Castelfranco Veneto, IT (06/10).

2016 Invited public lecture for high school students in Latina, IT (25/04).

2016 Invited public lecture for university students in Latina, IT (26/04).

2015 Invited public lecture at the Italian cultural centre in Haifa, IL (29/06).

2015 City Hall lecture for the Mayor and City Council, Pontinia, IT (25/05).

2015 Invited public lecture for secondary school students, Pontinia, IT (25/05).

2015 Invited public lecture at the Italian cultural centre in Tel Aviv, IL (04/04).

CONTRIBUTED CONFERENCE TALKS *(29 talks)*

2022 Journées scientifiques "Galaxies" du PNCG 2022, Strasbourg, France, Talk: "Mass loss and multiple populations in Galactic globular clusters" (20-22/06)

2021 Online Workshop on the Galactic Centre and Inner Galaxy, Heidelberg, Germany, Talk: "Star formation at the Galactic Centre: coevolution of multiple young stellar discs" (10-12/02)

2020 Compact Objects for All, Lund Observatory, Sweden, Talk: "Supermassive and intermediate-mass black holes in nuclear star clusters" (9-11/02).

2019 EWASS 2019, Lyon, France. Talks: "Unveiling the build-up history of galactic nuclei: models and observations in the era of ELTs" and "The dynamical origin of metallicity spreads in globular clusters" (24-28/06).

2019 EWASS 2019, Lyon, France. Talk: "The dynamical origin of metallicity spreads in globular clusters" (24-28/06/2019).

2019 "IAU Symposium 351 and MODEST 2019: Star Clusters: from the Milky Way to the Early Universe", Bologna, Italy. Talk: "The amazing life of a globular cluster: tidal interactions and mergers in the Galactic disc and nuclear star cluster" (27-31/05).

2018 "Survival of dense stellar systems in the Milky Way system", Heidelberg, Germany. Talk: "Surviving till the end: the link between globular and nuclear star clusters" (19-23/11).

2018 "SFB star clusters meeting", Heidelberg, Germany. Talk: "On the origin of multiple populations and metallicity spreads in Galactic globular clusters" (15-17/08).

2018 "Marcel Grossmann 14, session GW8", Rome, Italy. Talk: "The assembly history of nuclear star clusters: black holes and pulsars" (02-07/07).

2018 "Marcel Grossmann 14, session BH2", Rome, Italy. Talk: "The assembly history of nuclear star clusters: supermassive, intermediate mass and stellar black-holes" (02-07/07).

2017 "Piercing the Galactic darkness", Heidelberg, Germany. Talk: "The build-up of the Milky Way's Nuclear Star Cluster" (16-19/10).

2017 MODEST17, Prague, Czech. Talk: "The build-up of nuclear star clusters: simulations and observations" (18-22/09).

2017 SF2A 2017, "Chemical and dynamical modelling of Milky Way type galaxies", Paris, France. Talk "The mass assembly history of the Milky Way Nuclear Star Cluster" (04-07/07).

2017 SF2A 2017, "Models and interpretation of stellar populations", Paris, France. Talk "Constraining the origin of multiple stellar populations in globular clusters with *N*-body simulations" (04-07/07).

2016 631.Wilhelm und Else Heraeus–Seminar: "Stellar aggregates over mass and spatial

scales". Talk: "Simulating the mass assembly history of Nuclear Star Clusters: the imprints of cluster inspirals" (05-09/12).

2016 "Star Clusters: From Infancy to Teenagehood", Heidelberg, Germany. Talk: "Multiple Stellar Populations in GCs: Constraining their origin using *N*-body simulations" (08-12/08).

2016 EWASS 2016, session SS8, Athens, Greece. Talk: "Second-generation stellar disks in globular clusters" (04-08/07).

2016 MODEST16, "Star Clusters as Cosmic Laboratories", Bologna, Italy. Talk: "Simulating the mass assembly history of NSCs through Globular Cluster mergers" (18-22/04).

2015 Harvey–prize Workshop, Technion, Israel. Talk: "The formation and evolution of NSCs" (27/04).

2014 IAU Symposium #312, "Star Clusters and Black Holes in Galaxies across cosmic time", Beijing, China. Talk: "The formation and evolution of Nuclear Star Clusters" (19-25/08).

2014 Cefalù Meeting 2014, "The Unquiet Universe", Cefalù, Italy. Talk: "The formation and evolution of Nuclear star clusters: the role of Intermediate Mass Black Holes" (02-07/06).

2014 MODEST14, "Dense stellar systems from infant to old", Bad Honnef, Germany. Talk: "Evolution of second-generation stars in stellar disks of globular and nuclear clusters" (02-06/06).

2013 GC2013, "The Galactic Center Black Hole Laboratory", Granada, Spain. Talk: "The Galactic Center: the nuclear star cluster formation and evolution" (19-21/11).

2013 Gravasco Workshop, "Dynamics and kinetic theory of self–gravitating systems", Paris, France. Talk: "Evolution of second-generation stars in stellar disks of globular and nuclear clusters: ωCentauri as a test case" (04-08/11).

2013 Italian-Israeli Conference on High Energy Astrophysics, Akko, Israel. Talk: "Dynamics in NSCs and their relevance to tidal disruption and gravitational wave events" (13-14/10).

2012 Israel Physics Society Conference, Jerusalem, Israel. Talk: "Clumpy streams in a smooth dark matter halo: the case of Palomar 5" (09/12).

2011 Cefalù meeting 2011, Italy. Talk: "The formation of the Milky Way's NSC" (13-17/06).

2010 NVIDIA GPU Technology Conference, San Jose (CA), US. Talk: "Gravitational *N*-body Simulations: How Massive Black Holes Interact with Stellar Systems" (20-23/09).

2009 E4 Computing Workshop 2010, Bologna (Italy). Talk: "A high precision code to simulate *N*-body systems on hybrid machines: quality and performance benchmarking" (17-19/09).

SELECTED PRESS COVERAGE *(among more than 50 press articles, TV and radio interviews)*

This is a partial list of the press releases concerning my work. They include interviews with journals, radio and television.

1. **List of citing articles (Nature):** https://www.nature.com/articles/nature14333/metrics
2. **National Geographic:** https://tinyurl.com/3mwjyhy3
3. **Discovery Channel (Seeker):** https://tinyurl.com/2z42frf9
4. **Science:** http://www.sciencemag.org/news/2015/04/how-did-moon-really-form
5. Ranked **#47 among the top 100 science stories of 2015** on Discovery magazine: https://www.discovermagazine.com/the-sciences/the-moons-violent-birth
6. **BBC:** http://www.bbc.com/news/science-environment-32219494
7. **NBC:** https://tinyurl.com/2p8hdxth
8. **Los Angeles Times**: https://tinyurl.com/losAngTimes
9. **Le Huffington Post:** https://tinyurl.com/huffingtonpostfrance
10. **Der Spiegel:** https://tinyurl.com/derspiegelde
11. **El Pais:** http://elpais.com/elpais/2015/04/08/ciencia/1428495111_666688.html
12. **Le Scienze (Italian version of Scientific American):** http://www.lescienze.it/news/2015/04/09/news/impatto_terra_formazione_luna_composizione-2559065/
13. **Il Corriere della Sera:** https://tinyurl.com/ITcorrieredellasera
14. **Technion press release:** http://www.technion.ac.il/en/2015/04/the-origins-of-the-moon/

15. **Swiss Television interview:** https://tinyurl.com/Swiss-TV-Interview
16. **Radio24, Giovani Talenti interview:** https://tinyurl.com/yjsyd82f
17. **GEPI press release on Palomar 5 tital tails:** https://tinyurl.com/gepitidaltails
18. **Contribution to book chapters on outstanding women in science and technology:**
    - https://tinyurl.com/Agnese-Interview
    - https://www.donnamoderna.com/news/speciali/donne-come-noi/donne-come-noi-il-libro

REVIEWING ACTIVITIES

2022 –2023 Expert reviewer: **Hubble Space Telescope Cycle 30 and 31 TAC** (External Stellar Populations Panelist).

2013 – Referee for a number of **IOP Journals** as well as **MNRAS** and **A&A**.

CAREER BREAKS AND IMPACT ON PRODUCTUVITY

2022 **Maternity leave** (19 Nov 2022 – 10 March 2023, 4 months)

2020 **Maternity leave** (15 Feb 2020 – 15 Oct 2020, 8 months)

My first child was born at the beginning of the first COVID wave (March 21, 2020). The limited access to childcare during the pandemic drastically affected my work time. I had to combine both from home. My second child was born eight months ago and I have been taking care of him by myself since then.

REFERENCES

1) Dr. Paola Di Matteo
Associate Astronomer
GEPI - Batiment 11, Hipparque
Observatoire de Paris - Section de Meudon
5, Place Jules Janssen 92195 Meudon (FR)
Tel: +33-(0)1-4507-7867
E-mail: paola.dimatteo@obspm.fr

2) Dr. Nadine Neumayer
Faculty member - Galactic Nuclei Group Leader
Max Planck Institute for Astronomy
Königstuhl 17, D-69117 Heidelberg (DE)
Personal homepage:
http://www.mpia.de/homes/neumayer/
Tel: +49-(0)6221-528-446
E-mail: neumayer@mpia.de

3) Prof. Hagai Perets
Associate Professor
Physics Department
Technion - Israel Institute of Technology
Haifa, Israel 32000
Personal homepage:
https://hagaiperets.wixsite.com/perets-group
Tel: +972-(0)77-8871954
E-mail: hperets@ph.technion.ac.il

4) Dr. Ross P. Church
Senior Lecturer
Department of Astronomy and Theoretical Physics
Lund Observatory, Box 43
22100, Lund, Sweden
Personal homepage:
https://www.astro.lu.se/~ross
Tel: +46-(0)46-222-16-09
E-mail: ross@astro.lu.se