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Education

University of Birmingham, Birmingham, UK — PhD, 2014

University of Bologna, Bologna, Italy — M.Sc., 2009

Carleton University, Ottawa, Canada — B.Sc (Double Honours), 2006

Positions

Assistant Professor of Physics, University of Connecticut, 2019 —

Associate Research Scientist, Flatiron Institute, CCA, 2019—2023

I have a joint tenure-track position, shared between the Flatiron Institute's Center for Computational Astrophysics (CCA) and the University of Connecticut (UConn) until 2023. After this, I will be full-time at UConn.

Ada Lovelace Director of Diversity, Flatiron Institute, CCA, 2019-2023

My role is to increase diversity in computation astrophysics by organizing a computational astrophysics summer school once per year, advising on gender balance, and all issues pertaining to equity and inclusion at the CCA.

Flatiron Research Fellow 2017 - 2019

Flatiron Research Fellow at the CCA.

Marie Curie International Outgoing Fellow — 2014 - 2017

I spent the outgoing phase of the MC IOF postdoctoral fellowship at Caltech, with visiting status at NASA's Jet Propulsion Laboratory, with the European reintegration phase at the Max Planck Institute for Radio Astronomy in Bonn, Germany.

Teaching and Mentoring Experience

Guest Lecturer, Undergraduate student supervisor

In the summer 2018, I mentored 2 undergraduates at the CCA — one of whom has material for 2 papers. Moreover, I was invited to lecture for graduate class in Gravitational Waves, Ph237 at Caltech. Moreover, I lectured on Pulsar Timing Arrays at the 2015 Caltech Gravitational-Wave Astrophysics School. I also developed and taught an undergraduate calculus class called "Math Matters" at Carleton University (Ottawa, Canada), which I taught over the summer from 2010 to 2013.

Referee and Service Work

I am currently a referee for Physical Review Letters, Physical Review D, Astrophysical Journal, Monthly Notices of the Royal Astronomical Society, Classical and Quantum Gravity. I was also an NSF Astronomy grant panelist (2016).

Code Sharing for the Scientific Community

My codes and lecture notes are available on my github account, https://github.com/ChiaraMingarelli. I work primarily in Python and publish my codes with Jupyter notebooks. My public codes from Mingarelli et al. (2017) have been widely used by the community, including researchers at Imperial College London, and my undergraduate mentees at the CCA.

Selection of Recent Prizes, Honors and Awards

Amazon Web Services ML Award — October 2018
Value of $120,000 (USD)

Marie Curie International Outgoing Fellowship — 2014 - 2017
Project name "GW ASAP", Proposal number 623380, value €262,975 ($330k)

Marie Curie Actions "Communicating Science" Prize — 2017
Marie Curie Actions "Communicating Science" Prize for 2017, presented at the MCA Presidency Meeting in Malta, May 2017.

American Physical Society — 2016
Woman Physicist of the Month, November 2016

Springer Thesis Award — 2015
Thesis published by Springer Theses with $650 cash prize

Public Engagement in Science

Selection of Television Appearances and Podcasts:
Orbital Path podcast with Michelle Thaller; How the Universe Works, Science Channel, Seasons 5 and 7; Talk Nerdy with Cara Santa Maria, Episode 70; Story Collider podcast, "How I Ended Up At the Center of the Universe", and more.

Popular Science Articles

Scientific American, "Searching for the Gravitational Waves LIGO Can't Hear", by CMF Mingarelli, 2016; Amy Poehler Smart Girls, "Conversations with a Theoretical Astrophysicist", invited blog series for Women's Month 2016

High Profile Public Lectures

Amazon MARS 2018-2020, Palm Springs (talk given to Jeff Bezos); Dreamworks Animation Studios, Los Angeles, CA, USA; Ad Astra Academy (owned by Elon Musk), Bel Air, CA; Adler Planetarium, "Adler After Dark", Chicago, IL, USA.

Recent Invited Talks

I have given 49 invited talks at world-class research institutes such as Caltech, Princeton, Harvard, and NASA Headquarters, as well as high-profile meetings such as the American Astronomical Society. Here is a sample, with dates and locations of all talks are available upon request.

1. IPTA Meeting, Pune India. Towards detecting the GWB: new limits from IPTA DR2, June 2019
2. Johns Hopkins University (seminar) Probing SMBH mergers with PTAs, April 2019
3. Queen's University, Canada (Colloquium) Probing supermassive black hole mergers with pulsar timing, March 2019
4. University of Southern California (Colloquium), Los Angeles CA, USA, Probing supermassive black hole mergers with pulsar timing, January 2019
5. Vanderbilt University (Colloquium) Probing supermassive black hole mergers with pulsar timing, January 2019
6. University of Auckland (Colloquium) Pulsar Timing Arrays: The Next Window on the Gravitational-Wave Universe Department of Physics, December 2018
7. American Museum of Natural History (seminar), Pulsar Timing Arrays: The Next Window on the Gravitational-Wave Universe, November 2018
8. Cornell University, The Josephine Lawrence Hopkins Foundation Colloquium, Pulsar Timing Arrays: The Next Window on the Gravitational-Wave Universe, October 2018
9. Interplay between Particle and Astroparticle physics (Plenary Talk), October 2018
10. SISSA, Trieste, Italy (APC Seminar) Pulsar Timing Arrays:The Next Window on the Gravitational-Wave Universe, September 2018
11. Observatoire Côte d'Azur (Seminare Lagrange) Pulsar Timing Arrays: The Next Window on the Gravitational-Wave Universe, September 2018
12. University of California, Berkeley (seminar) Astrophysics of Supermassive Black Hole Mergers with Pulsar Timing Arrays, February 2018
13. New York University (seminar) Insights into Supermassive Black Hole Mergers, Stalling and Demographics with Pulsar Timing Arrays, February 2018
14. Harvard University (ITC Colloquium and ITC Luncheon Talk), Investigating supermassive black hole mergers with PTAs, December 2017
15. Princeton University (Gravity Group) Insights into Supermassive Black Hole Mergers, Stalling and Demographics with Pulsar Timing Arrays, April 2017
16. Perimeter Institute (Colloquium) Unlocking the potential of pulsar timing arrays, March 2017
17. 229th AAS Meeting Special Session: HEAD I (Plenary): "Astronomy Across the Gravitational Wave Spectrum", January 2017
18. Adler Planetarium (Colloquium), Astrophysics with Pulsar Timing Arrays, October 2016
19. 11th International LISA Symposium (Plenary) The Discovery Potential of Pulsar Timing Arrays, September 2016
20. NASA Headquarters (Colloquium) The Gravitational-Wave Universe seen by Pulsar Timing Arrays, April 2016
21. Canadian Institute for Advanced Research Meeting, CIFAR, The Discovery Potential of PTAs II: Anisotropy, Cosmology and Fundamental Physics, April 2016
22. California Institute of Technology (Astronomy Tea Talk) Astrophysics and Cosmology with Pulsar Timing Arrays, May 2015

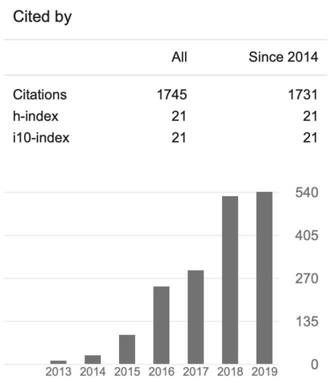

Figure 1: Google Scholar summary of publication citation statistics (September 2019)

Top publications (5 of 41)

A brief summary from Google Scholar is given in Figure 1. My h index is 21, and I have 1745 citations excluding my LIGO papers.

1. **C. M. F. Mingarelli**, T. Sidery, I. Mandel and A. Vecchio, *Characterizing stochastic gravitational wave background anisotropy with Pulsar Timing Arrays*, Phys. Rev. D 88, 062005 (2013). 79 citations.
2. **C. M. F. Mingarelli**, T. J. W. Lazio, A. Sesana et al., *Detection Prospects of Local Continuous Nanohertz Gravitational-Wave Sources with Pulsar Timing Arrays*, Nature Astronomy, Volume 1, pages 886–892 (2017). 46 citations.
3. **C. M. F. Mingarelli,** J. Levin, T. J. W. Lazio, Fast radio bursts and radio transients from black hole batteries, The Astrophysical Journal Letters, Volume 814, Issue 2, article id. L20, 5 pp. (2015). 51 citations.
4. Z. Arzoumanian et al., *The NANOGrav Nine-year Data Set: Limits on the Isotropic Stochastic Gravitational Wave Background,* ApJ 821, Issue 1,13, (2016). 172 citations.
5. P. D. Lasky, **C. M. F. Mingarelli,** et al., Gravitational-wave cosmology across 29 decades in frequency, Physical Review X, Volume 6, Issue 1, id.011035 (2016). 76 citations.

Bibliography

Monographs

- **C. M. F. Mingarelli**, Gravitational Wave Astrophysics with Pulsar Timing Arrays, Springer Thesis Series 2016, ISBN 978-3-319-18400-5.

Articles

1. **C. M. F. Mingarelli,** Pulsar Timing Arrays: The Next Window on the Gravitational-Wave Universe, Nature Astronomy, Volume 3, p. 8-10 (2019)
2. **C. M. F. Mingarelli et al.,** Improving Binary Millisecond Pulsar Distances with Gaia, submitted to ApJ
3. C. Conneely, A. H. Jaffe, **C. M. F. Mingarelli**, On the Amplitude and Stokes Parameters of a Stochastic Gravitational-Wave Background, MNRAS Volume 487, Issue 1, p.562-579 (2019)
4. A. Goulding, K. Pardo, J. Greene, **C. M. F. Mingarelli** et al., Discovery of a Close-separation Binary Quasar at the Heart of a z ~ 0.2 Merging Galaxy and Its Implications for Low-frequency Gravitational Waves, ApJL, Volume 879, Issue 2, article id. L21, 7 pp. (2019).
5. B. B. P. Perera, The International Pulsar Timing Array: Second data release, submitted to MNRAS, arXiv:1909.04534 (2019)

6. X. Siemens et al., Physics Beyond the Standard Model With Pulsar Timing Arrays, arXiv:1907.04960 (white paper)

7. D. R. Madison et al., The NANOGrav 11-year Data Set: Solar Wind Sounding Through Pulsar Timing, ApJ Volume 872, Issue 2, article id. 150, 13 pp. (2019).

8. K. Aggarwal et al., The NANOGrav 11 yr Data Set: Limits on Gravitational Waves from Individual Supermassive Black Hole Binaries, ApJ 880, Issue 2, article id. 116, 11 pp. (2019).

9. S. Burke-Spolaor et al., The astrophysics of nanohertz gravitational waves, T A&A Review, Volume 27, Issue 1, article id. 5, 78 pp. (2019)

10. L. Barack et al., Black holes, gravitational waves and fundamental physics: a roadmap, CQG, Volume 36, Issue 14, article id. 143001 (2019)[1]

11. **C. M. F. Mingarelli** and A. B. Mingarelli, Proving the short-wavelength approximation in Pulsar Timing Array gravitational-wave background searches, J. Phys. Commun. 2 105002 (2018).

12. J. Hazboun, **C. M. F. Mingarelli,** K. Lee, The Second International Pulsar Timing Array Mock Data Challenge, arXiv:1810.10527 (2018)

13. NANOGrav Collaboration, Science with the Next-Generation VLA and Pulsar Timing Arrays, To be published in the ASP Monograph Series, "Science with a Next-Generation VLA", ed. E. J. Murphy (ASP, San Francisco, CA), arXiv: 1810.06594

14. R. N. Caballero et al., Studying the solar system with the International Pulsar Timing Array, MNRAS Volume 481, Issue 4, p.5501-5516 (2018).

15. Z. Arzoumanian et al., The NANOGrav 11-year Data Set: Pulsar-timing Constraints On The Stochastic Gravitational-wave Background, ApJ, 859, Issue 1, article id. 47, 22 pp. (2018).

16. Z. Arzoumanian et al., The NANOGrav Eleven-year Data Set: High-precision timing of 45 Millisecond Pulsars, ApJS, Volume 235, Issue 2, article id. 37, 41 pp. (2018).

17. **C. M. F. Mingarelli**, T. J. W. Lazio, A. Sesana et al., Detection Prospects of Local Continuous Nanohertz Gravitational-Wave Sources with Pulsar Timing Arrays, Nature Astronomy, Volume 1, pages 886–892 (2017)[2].

18. **C. M. F. Mingarelli** for the NANOGrav Collaboration, Interpreting the Recent Upper Limit on the Gravitational Wave Background from the Parkes Pulsar Timing Array, arXiv:1602.06301 (2016)

19. Z. Arzoumanian et al., The NANOGrav Nine-year Data Set: Limits on the Isotropic Stochastic Gravitational Wave Background, ApJ 821, Issue 1,13, (2016).

[1] I wrote the section on pulsar timing arrays, and so appear in the first tier of authors.

[2] Nature Astronomy commissioned a News & Views article to be written about the importance of this work, see L. Moustakas, Nature Astronomy Volume 1, 825--826 (2017)

20. P. Lasky, **C. M. F. Mingarelli**, T. Smith et al., Gravitational-wave cosmology across 29 decades in frequency, Phys. Rev. X, Vol 6, Issue 1, 011035 (2016)[3].
21. S. R. Taylor, M. Vallisneri, J. A. Ellis, **C. M. F. Mingarelli**, T. J. W. Lazio, R. van Haasteren, Are we there yet? Time to detection of nanohertz gravitational waves based on pulsar-timing array limits, ApJL, 819, L6 (2016).
22. **C. M. F. Mingarelli** for NANOGrav, Interpreting the Recent Upper Limit on the Gravitational Wave Background from the Parkes Pulsar Timing Array; arXiv: 1602.06301 (2016).
23. L. Lentati et al., From Spin Noise to Systematics: Stochastic Processes in the First International Pulsar Timing Array Data Release, MNRAS, Vol 458 (2016).
24. G. Desvignes et al., High-precision timing of 42 millisecond pulsars with the European Pulsar Timing Array, MNRAS, Vol 458 (2016).
25. J. P. W. Verbiest et al., The International Pulsar Timing Array: First Data Release, MNRAS, Vol 457 (2016).
26. S. Babak et al., European Pulsar Timing Array limits on continuous gravitational waves from individual supermassive black hole binaries, MNRAS Vol 455 (2016).
27. N. Caballero et al., The noise properties of 42 millisecond pulsars from the European Pulsar Timing Array and their impact on gravitational wave searches, MNRAS, Vol 457 (2016).
28. **C. M. F. Mingarelli**, J. Levin, T. J. W. Lazio, Fast Radio Bursts and Radio Transients from Black Hole Batteries, ApJL 814, L20 (2015).
29. J. D. Romano, S. R. Taylor, N. J. Cornish, J. Gair, **C. M. F. Mingarelli**, R. van Haasteren, Phase-coherent mapping of gravitational-wave backgrounds using ground-based laser interferometers, Phys. Rev. D 92, 042003 (2015).
30. S. R. Taylor, **C. M. F. Mingarelli,** et al. Limits on anisotropy in the nanohertz stochastic gravitational-wave background Phys. Rev. Lett. 115, 041101 (2015).
31. G. Janssen et al., Gravitational wave astronomy with the SKA, Proceedings of Science (2014), arXiv:501.00127
32. **C. M. F. Mingarelli**, T. Sidery. Effect of small interpulsar distance variations in stochastic gravitational wave background searches with Pulsar Timing Arrays, Phys. Rev. D 90, 062011 (2014)[4].
33. J. R. Gair, J. D. Romano, S. R. Taylor, **C. M. F. Mingarelli**, Mapping gravitational-wave backgrounds using methods from CMB analysis: Application to pulsar timing arrays, Phys. Rev. D 90, 082001 (2014)[5].
34. R. M. Shannon et al., Summary of session C1: pulsar timing arrays, General Relativity and Gravitation, Volume 46, Issue 8, article id. 1765, 11 pp. (2014).

[3] Highlighted in APS “Physics". Synopsis: Homing in on Primordial Gravitational Waves

[4] Selected for APS Kaleidoscope

[5] Editor's Suggestion, PRD Highlights

35. **C. M. F. Mingarelli**, T. Sidery, I. Mandel and A. Vecchio. Characterizing stochastic gravitational wave background anisotropy with Pulsar Timing Arrays. Phys. Rev. D 88, 062005 (2013).

36. R. van Haasteren, **C. M. F. Mingarelli**, A. Vecchio, A. Lassus, Analysis of the first IPTA Mock Data Challenge by the EPTA timing data analysis working group, arXiv:1301.6673v1 (2013).

37. **C. M. F. Mingarelli**, K. Grover, T. Sidery, R. J. E. Smith, and A. Vecchio. Observing the Dynamics of Supermassive Black Hole Binaries with Pulsar Timing Arrays. Phys. Rev. Lett., 109 081104 (2012)[6].

38. A. Lassus, R. van Haasteren, **C. M. F. Mingarelli**, K. J. Lee, A. Vecchio, Data Analysis Library for Gravitational Wave Detection, Proceedings IAU Symposium No. 291, Volume 8, pp 438-440 Beijing, China, August (2012).

39. L. Carbone et al., Computer-games for Gravitational Wave science outreach: Black Hole Pong and Space Time Quest, Journal of Physics Conference Series, 363 012057, June (2012).

40. A. Y. Kamenshchik and **C. M. F. Mingarelli**, A generalized Heckmann-Schücking cosmological solution in the presence of a negative cosmological constant. Phys. Lett. B (693), 213 (2010).

41. A. B. Mingarelli and **C. M. F. Mingarelli**,, Conjugate points in the gravitational n-body problem, Celest. Mech. Dynam. Astron. 91, 391 (2005).

[6] Highlighted in APS ``Physics". Synopsis: Sailing Choppy Gravitational Seas