



The International Pulsar Timing Array & How To Get Involved

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Contents

- 🐾 What is the IPTA?
- 🐾 How is it organized?
- 🐾 Where do I get information?
- 🐾 How can I get involved?



What is the IPTA?

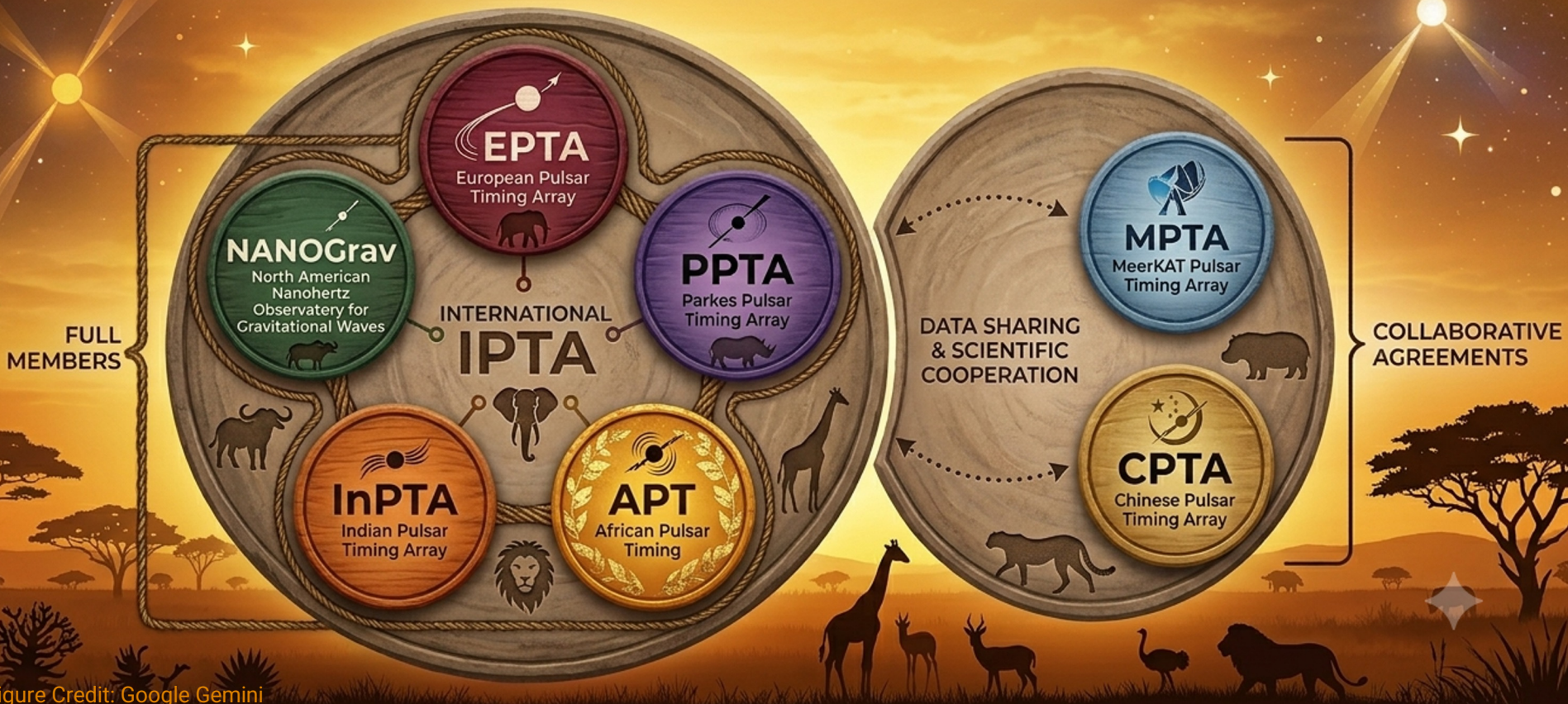
🐾 A consortium of consortia

🐾 Aim: “to facilitate collaboration [...] and promote progress [...]”



INTERNATIONAL PULSAR TIMING ARRAY (IPTA)

A GLOBAL CONSORTIUM FOR GRAVITATIONAL WAVE DETECTION



What is the IPTA? - Current Situation



Figure Credit: Thankful
Cromartie

What is the IPTA? - Current Situation



A consortium of consortia



APT, EPTA, InPTA, NANOGrav, PPTA



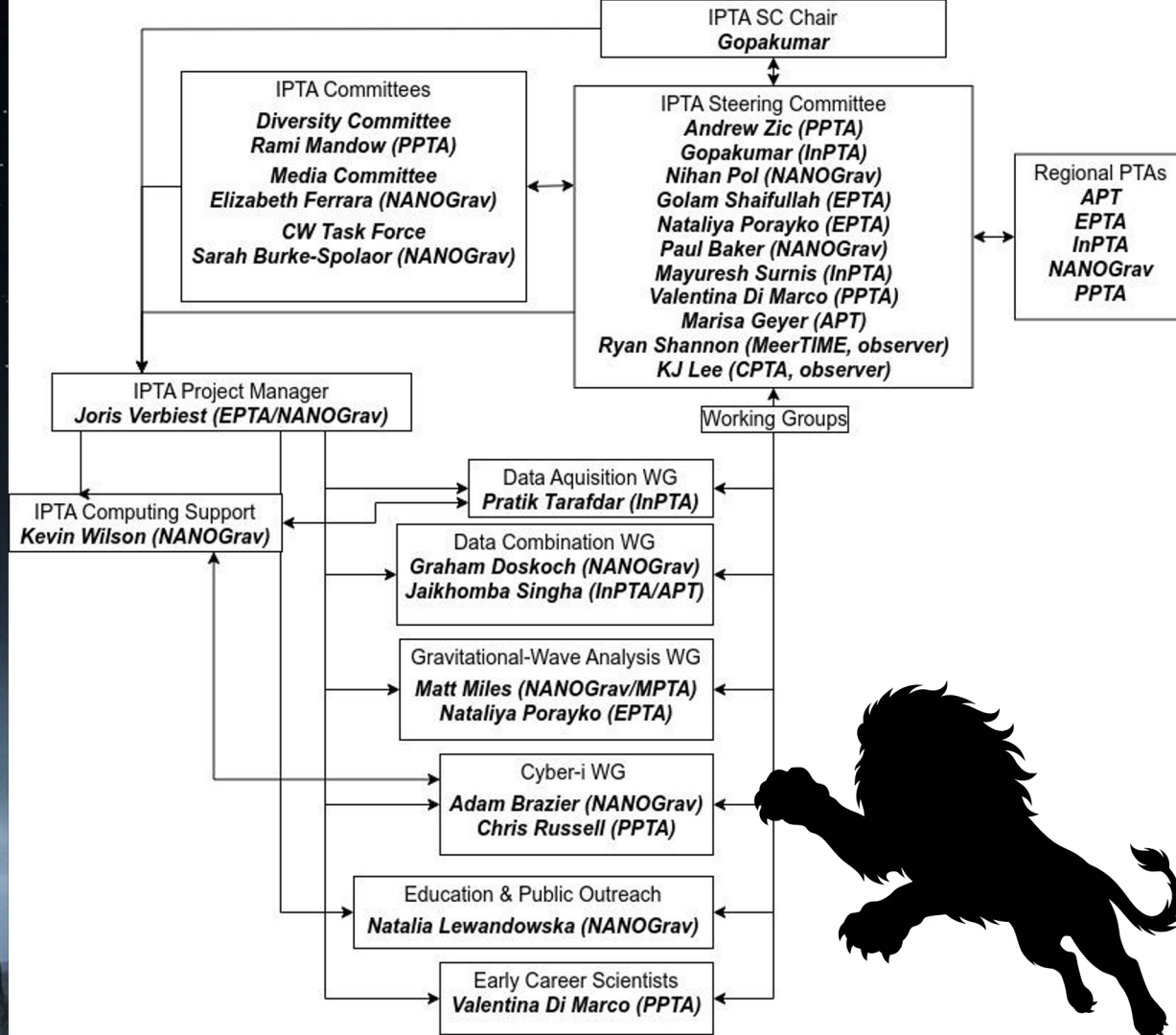
Every member of every member consortium is an IPTA member!



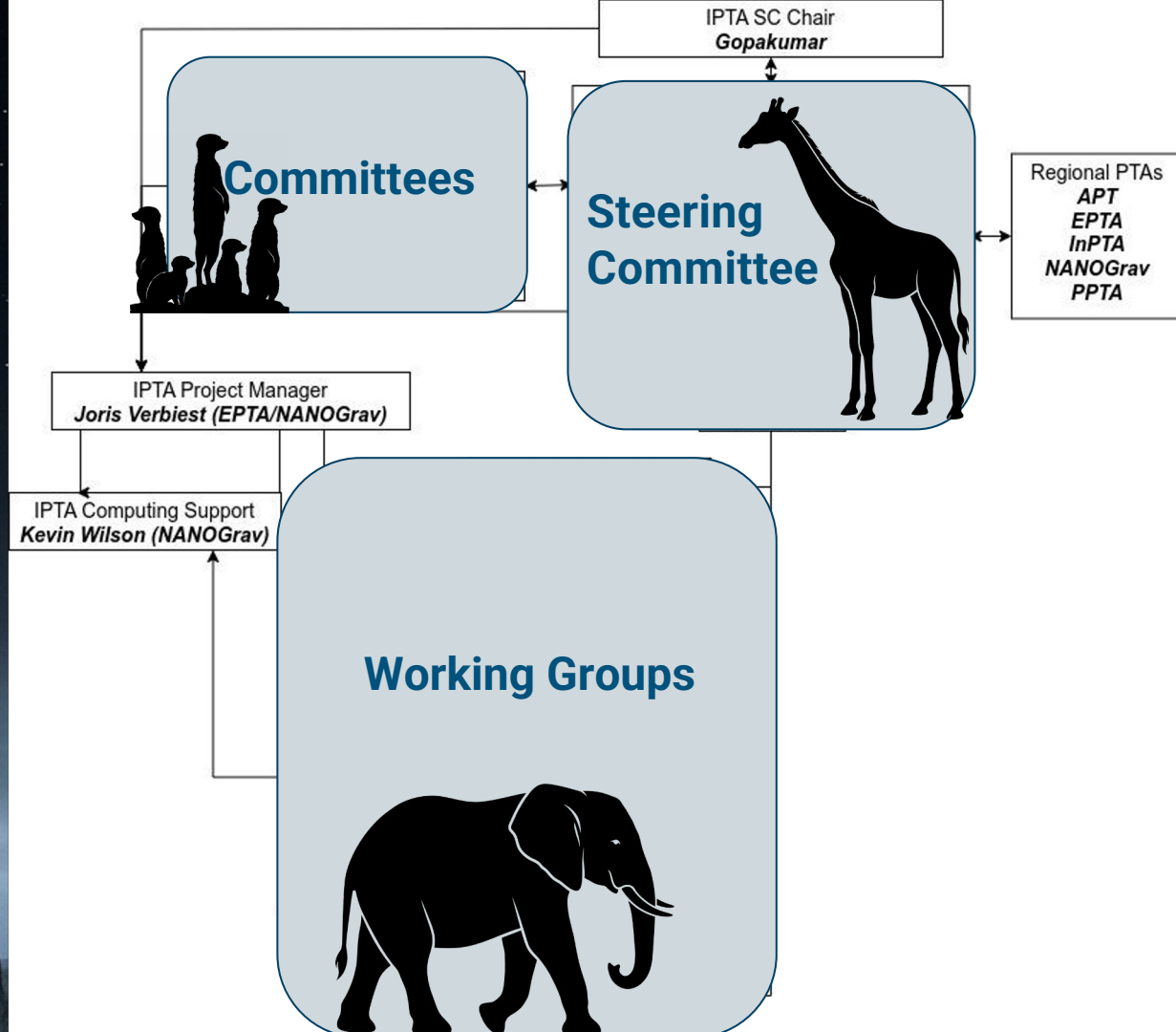
Data-sharing/Collaboration agreements with MPTA, CHIME, CPTA



How is the IPTA organized?



How is the IPTA organized?



How is the IPTA organized?

- 🐾 Management/Leadership : IPTA Steering Committee
= 2 representatives from each PTA + previous chair + IPTA manager

Currently:

Nataliya Porayko, Golam Shaifullah (EPTA),
Gopakumar (chair), Mayuresh Surnis (InPTA),
Paul Baker, Nihan Pol (NANOGrav),
Andrew Zic, Valentina Di Marco (PPTA),
Marisa Geyer (APT),
Ryan Shannon (MPTA), Kejia Lee (CPTA), Joris Verbiest (manager)

- 🐾 Working Groups

- 🐾 Committees



How is the IPTA organized?

Working Groups:

- 🐾 Data Acquisition (Chair: Pratik Tarafdar)
- 🐾 Data Combination (Chairs: Graham Daskoch, Jaikhomba Singha)
- 🐾 Gravitational-Wave Analysis (Chairs: Matt Miles, Nataliya Porayko)
- 🐾 Early Career Scientists (Chair: Valentina Di Marco)
- 🐾 Education & Public Outreach (Chair: Natalia Lewandowska)
- 🐾 Cyberinfrastructure (Chair: Adam Brazier, Chris Russell)



How is the IPTA organized?

Committees:

- 🐾 Steering Committee (Chair: Gopakumar)
- 🐾 Diversity Committee (Chair: Rami Madow)
- 🐾 Media Committee (Chair: Elizabeth Ferrara)
- 🐾 CW Detection Task Force (Chair: Sarah Burke-Spolaor)



Where Do I Get Information?



Where do I get information?

 IPTA wiki:
<https://wiki.ipta4gw.org>

Trace: · [ipta_steering_committee](#) · [diversity_committee](#) · [media_committee](#) · [cw_detection_task_force](#) · [education_and_public_outreach](#) · [ipta_working_groups](#) · [start](#)

International Pulsar Timing Array WIKI

Policies and organisation

- [Agreements/Policies/Constitution](#)
- [E-Mail Exploders](#)

Committees and Working Groups

- [IPTA Committees](#)
 - [Steering Committee](#)
 - [Steering Committee meeting minutes](#)
 - [Diversity Committee](#)
 - [Media Committee](#)
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 - [Data Acquisition](#)
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 - [Education and Public Outreach](#)
 - [Cyberinfrastructure](#)
 - [Pulse Profile Analysis](#)

Projects and Publications

- [Projects](#)
- [Papers in preparation](#)
- [Memos](#)
- [Preprints](#)

Resources

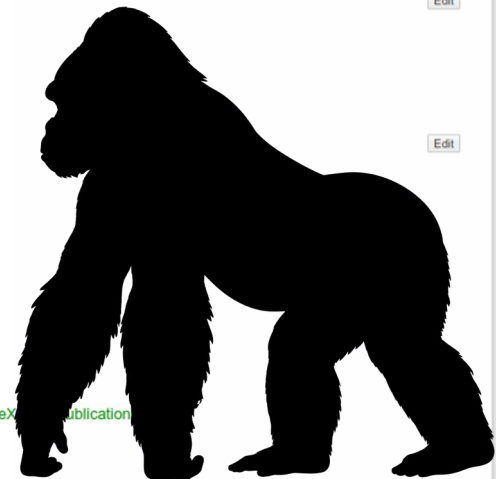
- [IPTA Telecons](#) ← **NEW!**
- [Centralised IPTA Computing Infrastructure](#)
- [Mentor Program](#)

- [Outreach](#)
- [FAQ](#)
- [Source Lists](#)
- [Shared MSP Discoveries](#)
- [Logo](#)
- [Logo/Banner Contest](#)
- [Acknowledgement for Telescopes, Observatories, Funding Projects \(LaTeX Publication\)](#)

Meetings and Workshops

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- ◊ [International Pulsar Timing Array WIKI](#)
- ◊ [Policies and organisation](#)
- ◊ [Committees and Working Groups](#)
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- ◊ [Resources](#)
- ◊ [Meetings and Workshops](#)



International Pulsar Timing Array WIKI

Policies and organisation

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- [E-Mail Exploders](#)

Committees and Working Groups

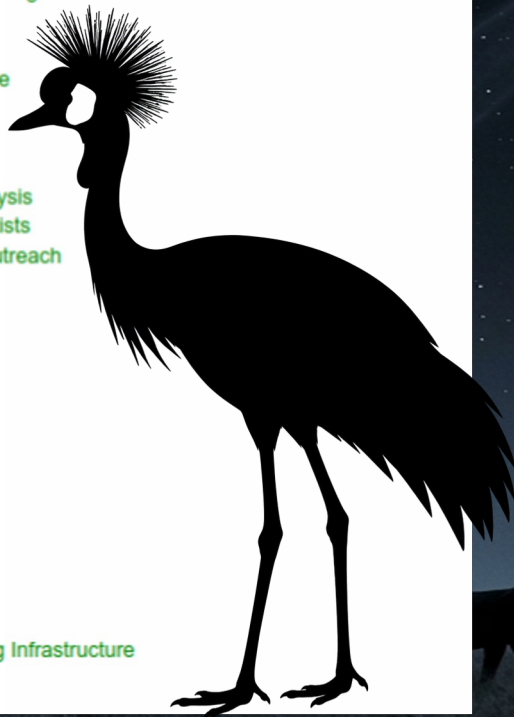
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- [Mentor Program](#)



Agreements/Policies/Constitution

On this page we give the Constitution, Policies and Agreements under which the IPTA operates

Constitution

- [IPTA Constitution](#) (15 March 2012)

Policies and Agreements

General

- [Project and Publication Policy](#) (January 2026)
- [Searching Statement of Intent](#) (7 September 2012)
- [Code of conduct/Anti-harassment policy](#) (January 2024)
- [Working Groups](#)
- [Continuous Wave Task Force Terms of Reference](#)

Data Sharing

- [Data-Sharing Agreement](#) (January 2026)
- [MeerTIME/IPTA Data-sharing Agreement](#) (14 Feb 2023)
- [CHIME Data-Sharing Agreement](#) (December 2023)
- [CPTA-Data Sharing Agreement](#) (June 2025)

Membership

- [Ratified Membership Policy](#) (28 August 2018)
- [InPTA joining agreement](#) (9 March 2021)
- [APT joining agreement](#) (7 April 2025)

Old & Outdated

- [Project and Publication policy](#) (January 2025)
- [Publication Policy](#) (15 March 2012)
- [Detection Protocol](#) (2014)
- [Data-Sharing Agreement](#) (26 Sep 2023)
- [Original Data-Sharing Agreement](#) (2009)
- [Code of conduct/Anti-harassment policy](#) (March 2017)

International Pulsar Timing Array WIKI

Policies and organisation

- Agreements/Policies/Constitution
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Committees and Working Groups

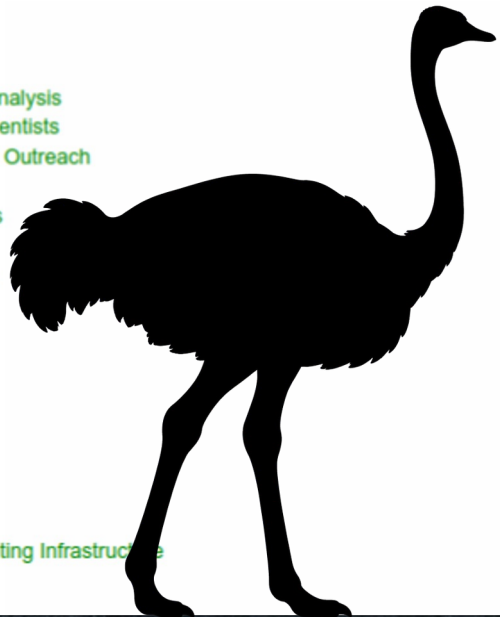
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Projects and Publications

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- Memos
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Resources

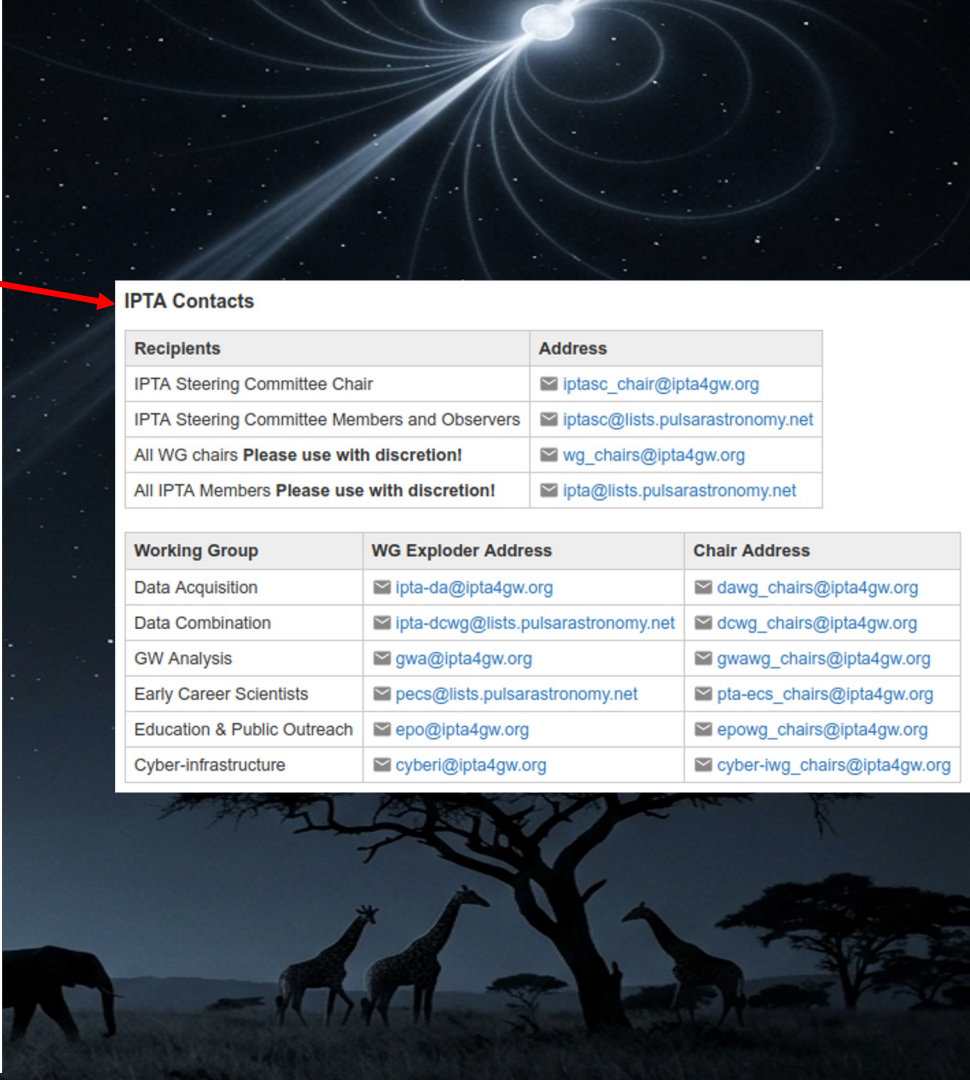
- IPTA Telecons ← **NEW!**
- Centralised IPTA Computing Infrastructure
- Mentor Program



IPTA Contacts

Recipients	Address
IPTA Steering Committee Chair	✉ iptasc_chair@ipta4gw.org
IPTA Steering Committee Members and Observers	✉ iptasc@lists.pulsarastronomy.net
All WG chairs Please use with discretion!	✉ wg_chairs@ipta4gw.org
All IPTA Members Please use with discretion!	✉ ipta@lists.pulsarastronomy.net

Working Group	WG Exploder Address	Chair Address
Data Acquisition	✉ ipta-da@ipta4gw.org	✉ dawg_chairs@ipta4gw.org
Data Combination	✉ ipta-dcwg@lists.pulsarastronomy.net	✉ dcwg_chairs@ipta4gw.org
GW Analysis	✉ gwa@ipta4gw.org	✉ gwawg_chairs@ipta4gw.org
Early Career Scientists	✉ pecs@lists.pulsarastronomy.net	✉ pta-ecs_chairs@ipta4gw.org
Education & Public Outreach	✉ epo@ipta4gw.org	✉ epowg_chairs@ipta4gw.org
Cyber-infrastructure	✉ cyberi@ipta4gw.org	✉ cyber-iwg_chairs@ipta4gw.org



International Pulsar Timing Array WIKI

Policies and organisation

- Agreements/Policies/Constitution
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Committees and Working Groups

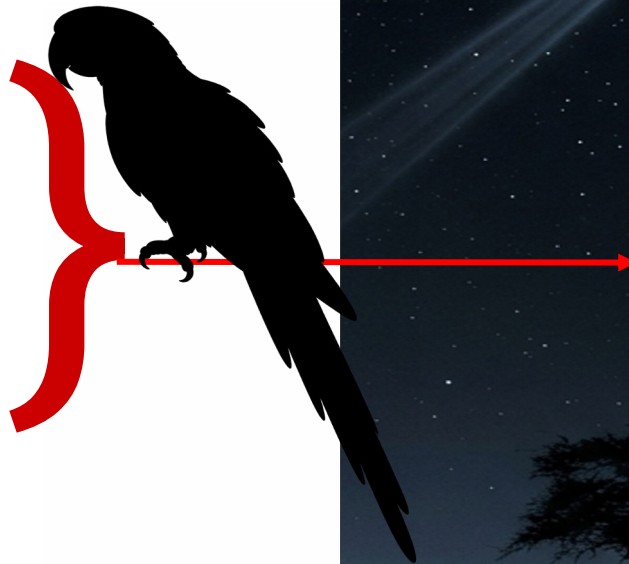
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- IPTA Telecons ← **NEW!**
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Mostly meeting minutes,
also some contact
information

International Pulsar Timing Array WIKI

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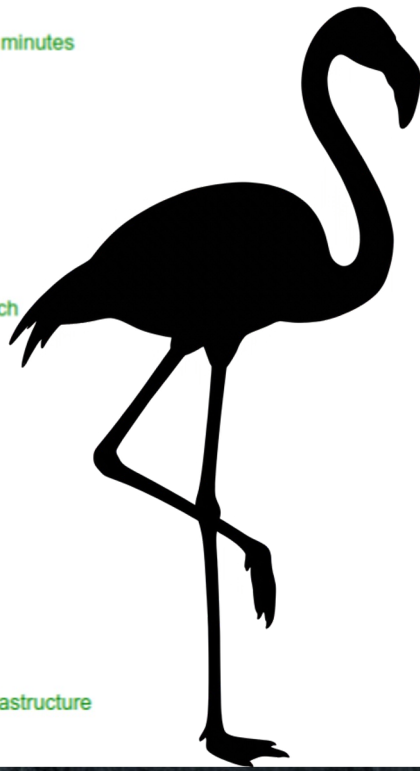
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The IPTA Mentor Program

IPTA Mentor Program

Welcome to the IPTA Mentor Program. In this program, we aim to facilitate an opportunity for student and early-career researchers/scientists to work with a more senior member of the IPTA, gaining useful skills, knowledge and experience.

This pilot program will commence in 2024.

[Find out more about how the program works](#)

[Report an Issue](#)

Mentors

For our 2024 intake, click on links below to view the profiles of each of the mentors:

Mentors	Mentoring Topics
Manjari Bagchi (InPTA)	science questions; practical science; leading papers; living / working abroad; work / organisational culture
Sarah Burke-Spolaor (NANOGrav)	faculty applications; postdoc applications; choosing mentors; the funding system and grant proposals in the USA ; gravitational-wave astrophysics
Aurélien Chalemeau (EPTA)	fighting imposter syndrome; finding jobs; DEI; living in foreign countries; working in a large collaboration
Vivek Venkatraman Krishnan (EPTA)	grant proposal writing; programming; living in Germany
Natalia Lewandowska (NANOGrav)	job applications; CV vs. resume; two-body problem; living abroad; getting to know new cultures
James McKee (EPTA/ NANOGrav)	neurodiversity; presenting; job searching; moving countries; finding collaborators
Aditya Parthasarathy (EPTA)	pulsar timing; nanoHertz GW searches; pulsar emissions; population studies; radio / Gamma-ray analysis
Delphine Perrodin (EPTA)	living / working abroad; work / life balance; DEI; career advice; finding jobs
Andrea Possenti (EPTA)	career advice; project management; practical science; grant applications; large collaborations fellowships
Golam Shaifullah (EPTA)	pulsar timing; data combination; Python coding; proposal writing; mental health and well-being
Caterina Tiburzi (EPTA)	applying for grants / fellowships; networking; DEI; living / working abroad, working in large collaborations
Joris Verbiest (EPTA/ NANOGrav)	research; networking; career planning/funding; soft skills; living abroad
Sarah Vigeland (NANOGrav)	career advice; GW scientific questions; leading papers, project management, finding jobs

Connect with a Mentor Today!

Let us know, by email us at mentoring@lists.pulsarastronomy.net that you would like to participate in the mentor program and have selected a mentor. We'll take it from there and facilitate your connections. Please also read the mentor program guidelines and IPTA code of conduct.

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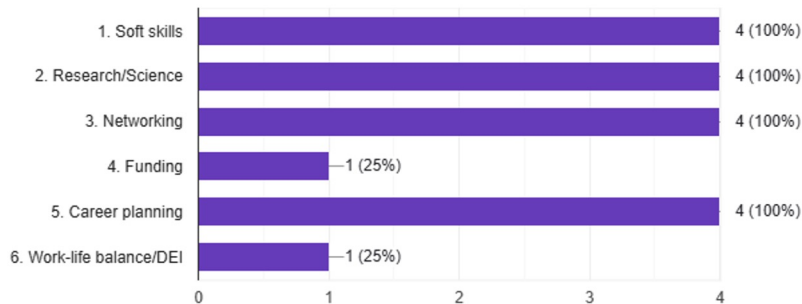
The IPTA Mentor Program

Content of mentorship

At the start of the program, in which of the listed areas did you think mentorship was desirable? (multiple choice allowed)



4 responses



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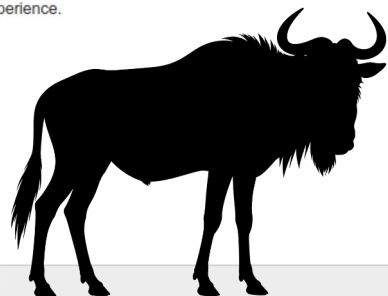
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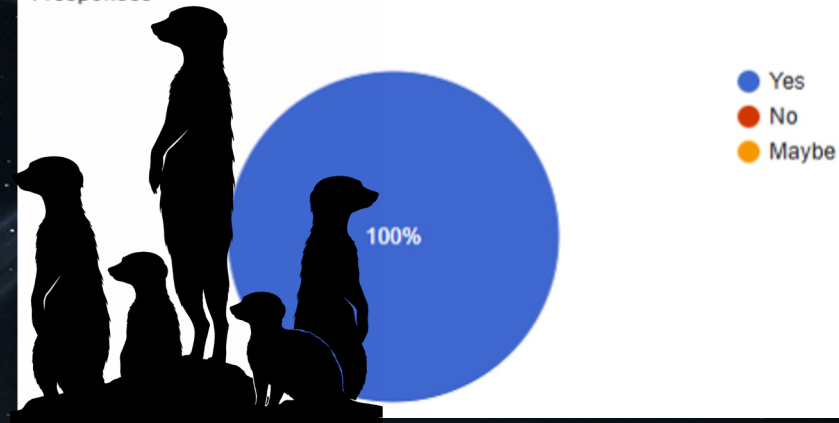
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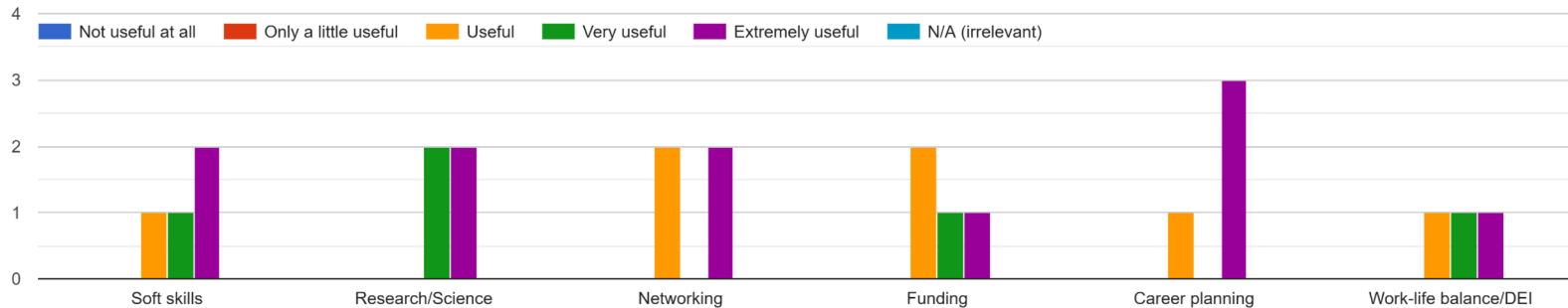
The IPTA Mentor Program

Would you recommend this program to an IPTA colleague?

4 responses



How useful was mentoring in different areas?



The IPTA Mentor Program

Would you recommend this program to an IPTA colleague?

4 responses

- Yes
- No
- Maybe

100%

How useful was mentoring in different areas?

Not useful at all Only a little useful Useful Very useful Extremely useful N/A (irrelevant)

Soft skills

Research/Science

Networking

Funding

Career planning

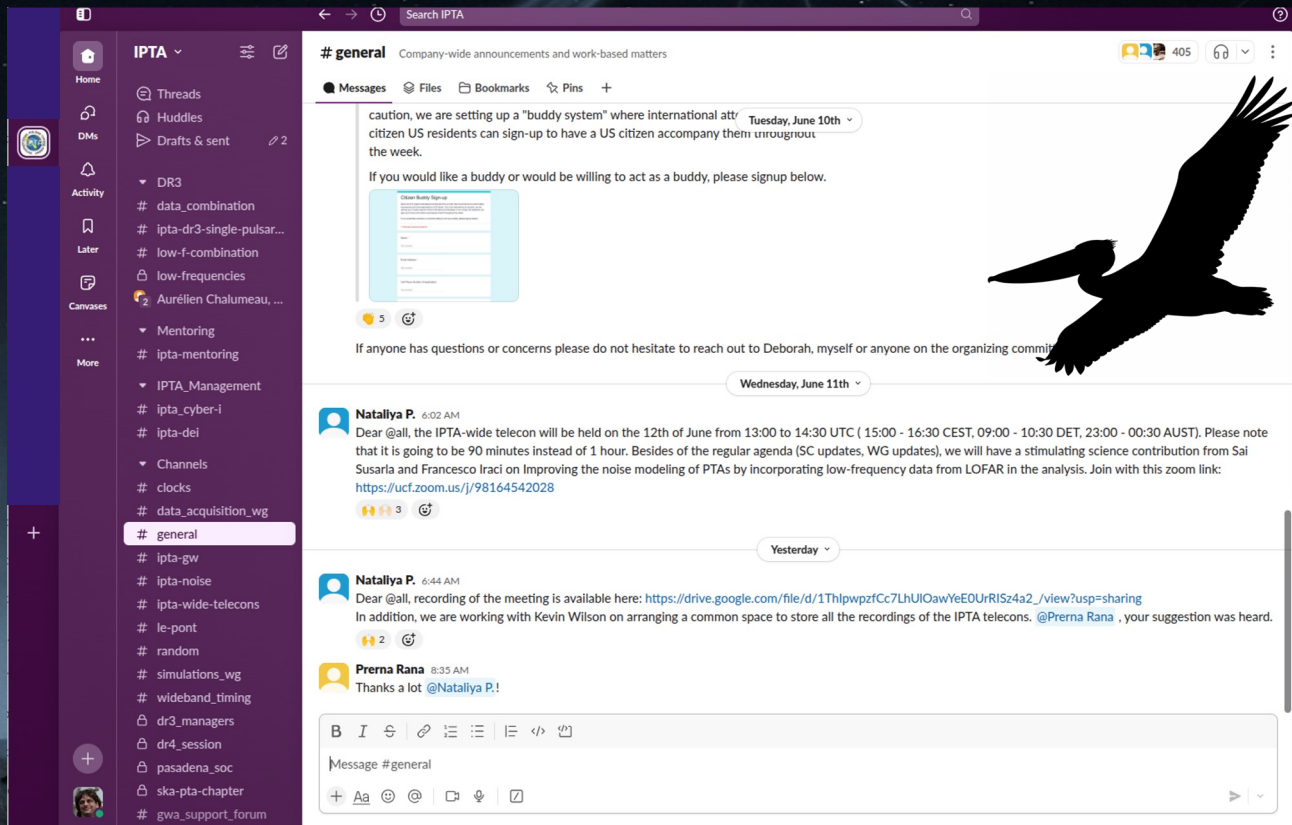
Work-life balance/DEI

Being
Restarted
Soon!

Where do I get information?

 IPTA wiki:
<https://wiki.ipta4gw.org>

 Slack (ask Kevin for an account!)



IPTA Home DMs Activity Later Canvases More

general Company-wide announcements and work-based matters

Messages Files Bookmarks Pins +

caution, we are setting up a "buddy system" where international citizen US residents can sign-up to have a US citizen accompany them throughout the week.

If you would like a buddy or would be willing to act as a buddy, please sign up below.

5

If anyone has questions or concerns please do not hesitate to reach out to Deborah, myself or anyone on the organizing committee

Wednesday, June 11th

Nataliya P. 6:02 AM
Dear @all, the IPTA-wide telecon will be held on the 12th of June from 13:00 to 14:30 UTC (15:00 - 16:30 CEST, 09:00 - 10:30 DET, 23:00 - 00:30 AUST). Please note that it is going to be 90 minutes instead of 1 hour. Besides of the regular agenda (SC updates, WG updates), we will have a stimulating science contribution from Sai Susarla and Francesco Iraci on Improving the noise modeling of PTAs by incorporating low-frequency data from LOFAR in the analysis. Join with this zoom link: <https://ucf.zoom.us/j/98164542028>

Yesterday

Nataliya P. 6:44 AM
Dear @all, recording of the meeting is available here: <https://drive.google.com/file/d/1ThlpwzfcC7LhUjOawYeE0UrRISz4a2/view?usp=sharing>. In addition, we are working with Kevin Wilson on arranging a common space to store all the recordings of the IPTA telecons. @Prerna Rana, your suggestion was heard.

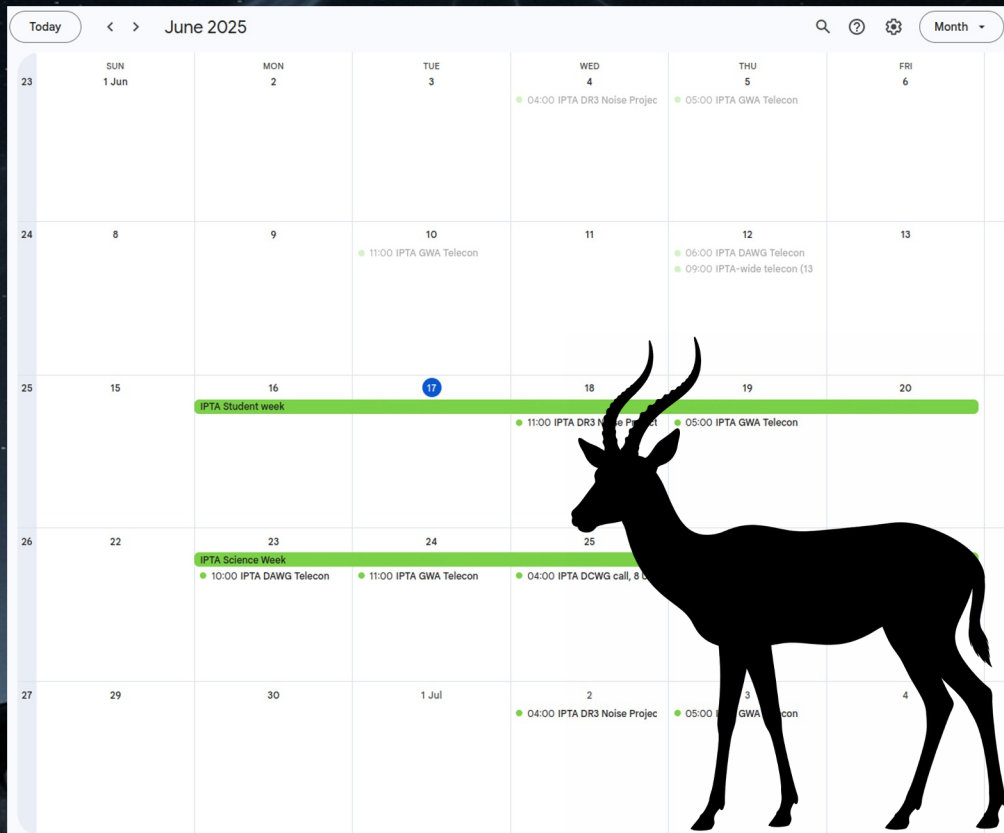
Prerna Rana 8:35 AM
Thanks a lot @Nataliya P.!

Message #general

+ Aa @ @ @ @ @ @

Where do I get information?

- IPTA wiki: <https://wiki.ipta4gw.org>
- Slack (ask Kevin for an account!)
- IPTA Google Calendar (ask me!)



Where do I get information?

🧭 IPTA wiki: <https://wiki.ipta4gw.org>

🧭 Slack (ask Kevin for an account!)

🧭 IPTA Google Calendar (ask me!)

🧭 Your IPTA Steering Committee Representatives

🧭 Me (I'm responsible for communication...) – Joris.Verbiest@ucf.edu

🧭 Ask Kevin Wilson (IPTA "Computing Resource") – kpwilson@pm.me

How can I get involved?

🕒 Best way is by *joining a Working Group*

🐘 Every IPTA member is welcome to attend every telecon.

🐘 All the work originates in, is discussed in, and is carried out within the WGs

🐘 IPTA SC consults with WGs and PTAs

🐘 *Ask WG or Committee chairs how you can help*

🕒 Join the *Mentor Program!*

🕒 Feel free to *contact your SC representative!*

🕒 Participate in IPTA discussions within your own PTA

🕒 Attend the IPTA-wide telecons

🕒 Feel free to get in touch with me (Joris.Verbiest@ucf.edu)

🕒 Get a *wiki* account, *Slack* account, sign up for the Google *Calendar*





The background of the slide is a dark, atmospheric night scene of a savanna. In the foreground, there is a field of tall, dark grass. In the middle ground, a herd of elephants is silhouetted against the dark sky, walking from left to right. To their right, a group of giraffes is also silhouetted, standing near a large, spreading acacia tree. The sky is filled with numerous small stars, and a bright crescent moon is visible on the left side. The text "Additional Slides: IPTA History (not up-to-date)" is centered in the upper half of the image in a white, sans-serif font. A small blue horizontal line is positioned below the word "History".

Additional Slides: IPTA History (not up-to-date)



History

The International Pulsar Timing Array

R N Manchester (for the IPTA)

CSIRO Astronomy and Space Science, PO Box 76, Epping NSW 1710, Australia

E-mail: dick.manchester@csiro.au

Received 28 May 2013, in final form 4 September 2013

Published 4 November 2013

Online at stacks.iop.org/CQG/30/224010

Abstract

The International Pulsar Timing Array (IPTA) is an organization whose *raison d'être* is to facilitate collaboration between the three main existing PTAs (the EPTA in Europe, NANOGrav in North America and the PPTA in Australia) in order to realize the benefits of combined PTA data sets in reaching the goals of PTA projects. Currently, shared data sets for 50 pulsars are available for IPTA-based projects. Operation of the IPTA is administered by a Steering Committee consisting of six members, two from each PTA, plus the immediate past Chair in a non-voting capacity. A Constitution and several Agreements define the framework for the collaboration. Web pages provide information both to members of participating PTAs and to the general public. With support from an NSF PIRE grant, the IPTA facilitates the organization of annual Student Workshops and Science Meetings. These are very valuable both in training new students and in communicating current results from IPTA-based research.

PACS numbers: 01.10.Hx, 97.60.Gb, 04.30.Tv

(Some figures may appear in colour only in the online journal)

History

First “IPTA Meeting” at AO, 2008

Presented at Amaldi meeting in
2009

Classical and Quantum Gravity

The International Pulsar Timing Array project: using pulsars as a gravitational wave detector

G Hobbs¹, A Archibald², Z Arzoumanian³, D Backer⁴, M Bailes⁵, N D R Bhat⁵, M Burgay⁶, S Burke-Spolaor^{1,5}, D Champion^{1,7}, I Cognard⁸ [+ Show full author list](#)

Published 6 April 2010 • 2010 IOP Publishing Ltd

[Classical and Quantum Gravity, Volume 27, Number 8](#)

Citation G Hobbs *et al* 2010 *Class. Quantum Grav.* **27** 084013

DOI 10.1088/0264-9381/27/8/084013



Article PDF

[References](#) ▾

[+ Article and author information](#)

Abstract

The International Pulsar Timing Array project combines observations of pulsars from both northern and southern hemisphere observatories with the main aim of detecting ultra-low frequency ($\sim 10^{-9}$ – 10^{-8} Hz) gravitational waves. Here we introduce the project, review the methods used to search for gravitational waves emitted from coalescing supermassive binary black-hole systems in the centres of merging galaxies and discuss the status of the project.

History

First "IPTA Meeting" at AO, 2008

Presented at Amaldi meeting in 2009

Second IPTA Meeting (*with* student week!) in
Leiden, 2010

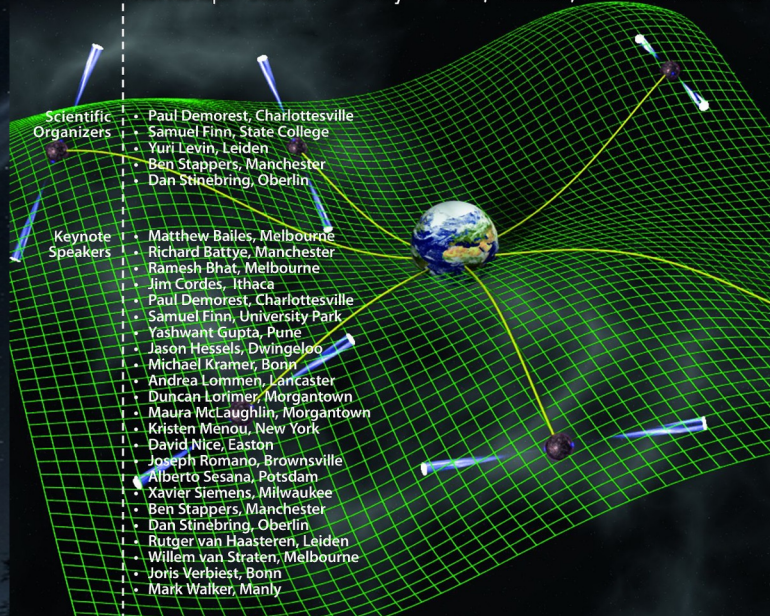
Steering Committee established 2011

Lorentz
center

IPTA 2010

Detecting Gravitational Waves with Pulsars

Workshop: June 21 – July 2 2010, Leiden, The Netherlands



Scientific
Organizers

- Paul Demorest, Charlottesville
- Samuel Finn, State College
- Yuri Levin, Leiden
- Ben Stappers, Manchester
- Dan Stinebring, Oberlin

Keynote
Speakers

- Matthew Bailes, Melbourne
- Richard Battye, Manchester
- Ramesh Bhat, Melbourne
- Jim Cordes, Ithaca
- Paul Demorest, Charlottesville
- Samuel Finn, University Park
- Yashwant Gupta, Pune
- Jason Hessels, Dwingeloo
- Michael Kramer, Bonn
- Andrea Lommen, Lancaster
- Duncan Lorimer, Morgantown
- Maura McLaughlin, Morgantown
- Kristen Menou, New York
- David Nice, Easton
- Joseph Romano, Brownsville
- Alberto Sesana, Potsdam
- Xavier Siemens, Milwaukee
- Ben Stappers, Manchester
- Dan Stinebring, Oberlin
- Rutger van Haasteren, Leiden
- Willem van Straten, Melbourne
- Joris Verbiest, Bonn
- Mark Walker, Manly

Topics

- Measuring Nanohertz Gravitational Waves via Pulsar Timing
- Practical Data Analysis Tutorials
- Astrophysics of Nanohertz Gravitational Waves Sources
- Pulse Time of Arrival Measurement
- Effect of the Interstellar Medium
- Gravitational Waves Detection Strategies for Pulsar Timing

The Lorentz Center is an international center in the Sciences. Its aim is to organize workshops for scientists in an atmosphere which fosters collaborative work, discussions and interactions. For registration see: www.lorentzcenter.nl

Photo credit: Michael Reiner, Max Planck Institute for Radioastronomy
Poster design: SuperNova Studios, Den Haag



Lorentz
center

www.lorentzcenter.nl

History

- First “IPTA Meeting” at AO, 2008
- Presented at Amaldi meeting in 2009
- Second IPTA Meeting (*with* student week!) in Leiden, 2010
- Steering Committee established Feb 2011
- Oct 2011: Start of the first IPTA data combination

First phase of the IPTA Combined Limit Paper Working Group: The Committee of Six

Below is a list (in reverse chronological order) of the actions undertaken in the first phase of the project, by the “committee of six”.

06 October 2011

On 06 October 2011, a working group was convened to facilitate the creation of a joint IPTA paper with a limit on the gravitational wave background. The original committee was invited by the IPTA SC and consisted of two members of each consortium: Paul Demorest, George Hobbs, Rick Jenet, Ryan Shannon, Rutger van Haasteren and Joris Verbiest.

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Feb/May 2016: Publication of
the first IPTA data combination



The International Pulsar Timing Array: First data release

J. P. W. Verbiest,^{1,2★} L. Lentati,³ G. Hobbs,⁴ R. van Haasteren,⁵ P. B. Demorest,⁶
G. H. Janssen,⁷ J.-B. Wang,⁸ G. Desvignes,² R. N. Caballero,² M. J. Keith,⁹

PTA subset	GWB limit ($\times 10^{-15}$)	Published limit ($\times 10^{-15}$)	Reference
NANOGrav	4.5	1.5	Arzoumanian et al. (2016)
EPTA	3.3	3.0	Lentati et al. (2015)
PPTA	2.8	1.0	Shannon et al. (2015)
IPTA	1.7		



From spin noise to systematics: stochastic processes in the first International Pulsar Timing Array data release

L. Lentati,^{1★} R. M. Shannon,^{2,3} W. A. Coles,⁴ J. P. W. Verbiest,^{5,6} R. van Haasteren,⁷
J. A. Ellis,⁷ R. N. Caballero,⁶ R. N. Manchester,² Z. Arzoumanian,⁸ S. Babak,⁹

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- Oct 2019: Second IPTA data release

The International Pulsar Timing Array: second data release

B. B. P. Perera^{1,2}★, M. E. DeCesar³★, P. B. Demorest⁴, M. Kerr⁵, L. Lentati⁶,
D. J. Nice³, S. Osłowski⁷, S. M. Ransom⁸★, M. J. Keith¹, Z. Arzoumanian⁹



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- Oct 2019: Second IPTA data release published
- March 2021: InPTA joins
- April 2022: IPTA WGs Formally established (under discussion since 2017)
- April 2025: APT joins
- 2026/7?: Third IPTA data combination?