The International Pulsar Timing Array

R. N. Manchester

CSIRO Astronomy and Space Science
Sydney Australia

Summary

- What is the IPTA?
- IPTA websites
- Data sharing, projects, etc
- The Future

What is the IPTA?

- It's an organisation that facilitates the holding of **great meetings!**

What is the IPTA?

- It's an organisation that facilitates the holding of **great meetings!**
- The IPTA is a **consortium of consortia**, namely existing PTAs from around the world
- The aims of the IPTA are to **facilitate collaboration** between participating PTA groups and to **promote progress** toward PTA scientific goals
- The IPTA has a **Constitution** which states these points and defines the rules under which it operates
- There is a **Steering Committee** which sets policy guidelines for data sharing, publication of results etc. The current IPTASC is:

EPTA: Ben Stappers, Gilles Theureau

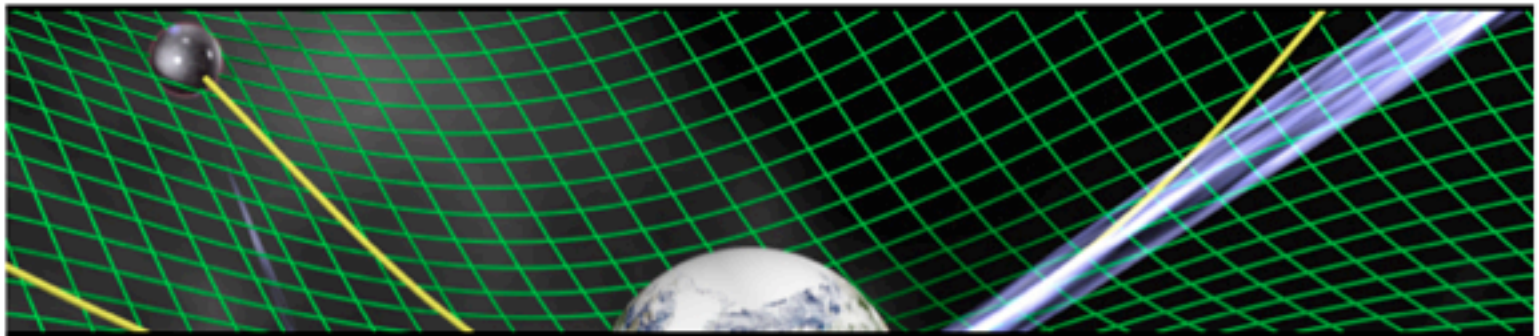
NANOGrav: Scott Ransom, Ingrid Stairs

PPTA: Dick Manchester (Chair), Willem van Straten

Andrea Lommen (Immediate past-Chair, non-voting)

IPTA Website: www.ipta4gw.org

International Pulsar Timing Array



Home | Gravitational Waves | Pulsar Timing | Telescopes | Institutions | Meetings | Data Challenges | Links | Contact | Internal

Introduction to the IPTA Concept

Posted on May 16, 2011 by admin

The **International Pulsar Timing Array** (IPTA) is a consortium of consortia[1] , comprised of the European Pulsar Timing Array (EPTA), the North American Nanohertz Observatory for Gravitational Waves (NANOGrav), and the Parkes Pulsar Timing Array (PPTA). The principal goal of the IPTA is to detect gravitational waves using an array of approximately 30 pulsars. This goal is shared by each of the participating consortia individually, but they have all recognized that their goal will be achieved more quickly in collaboration, and by combining their respective resources. Sharing resources will also help to reach other IPTA goals, for example, establishing a pulsar-based reference timescale.

EPTA

NANOGrav

PPTA

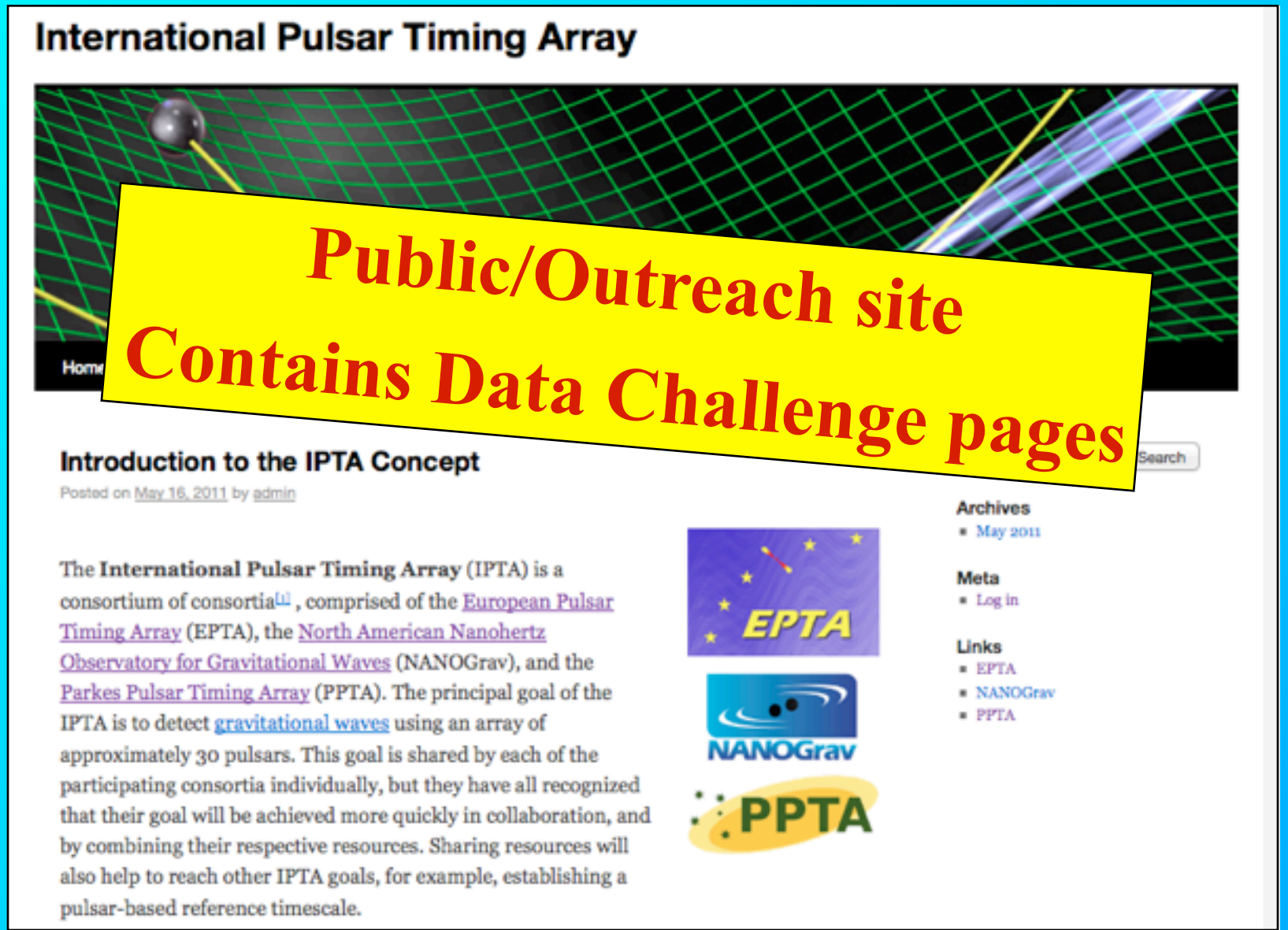
Search

Archives
- May 2011

Meta
- Log in

Links
- EPTA
- NANOGrav
- PPTA

IPTA Website: www.ipta4gw.org



Data Challenges

In order to encourage development of gravitational wave (GW) search algorithms for pulsar timing data, the IPTA has issued the first "IPTA Data Challenge", i.e., simulated pulsar data containing an unknown GW signal. The challenge is to develop algorithms to detect, or limit the presence of, a GW signal in the data. This, and all future data challenges are open to all, and submissions from external parties are encouraged.

IPTA data challenges will consist of "open" and "closed" data sets. The answer (i.e. the full detail of the simulated signals) for the open data set will be published at the start of the data challenge and can be used for calibration and tests of software. The closed data sets are the real challenge, for which all information regarding the simulations will remain confidential until after the close of the data challenge.

Data Challenges

In order to encourage development of gravitational wave (GW) search algorithms for pulsar timing data, the IPTA has issued the first "IPTA Data Challenge", i.e., simulated pulsar data containing an unknown GW signal. The challenge is to develop algorithms to detect, or limit the presence of, a GW signal in the data. This, and all future data challenges are open to all, and submissions from external parties are encouraged.

Data Challenge 1

Data challenge issued: 2012-03-23; Data challenge closes: 2012-09-28

The *First IPTA Data Challenge* was released on 23rd March 2012 and will close on 28th September 2012, with results released shortly afterwards. This first challenge simplifies some of the complexities of pulsar timing array data, and is therefore a "warm up" to the more difficult data challenges that follow. For more information, or to download the data sets, go to the Data Challenge 1 page.

IPTA Wiki: www.ipta4gw/wiki

International Pulsar Timing Array WIKI

Contents:

- Agreements/Policies/Constitution
- Projects
- Working Groups
- Source Lists
- Shared Data
- Preprints/Previews of IPTA related papers
- Logo/Banner Contest
- IPTA Steering Committee Meeting Minutes
- IPTA 2011 Science Week and Workshop Materials
- FAQ
- Contacts

Logged in as: Dick Manchester (dick.manchester) start.tx

Edit this page | Old revisions | Admin | Update Profile

IPTA Wiki: www.ipta4gw/wiki

International Pulsar Timing Array WIKI

- Main working area for IPTA business – accessible to members of participating PTAs
- Contains pages for policy documents, shared data release, IPTA projects and preprints, Steering Committee Minutes, etc.
- Requires approved "User" status to view (all) and edit (most) pages

- IPTA 2011 Science Week and Workshop Materials
- FAQ
- Contacts

Logged in as: Dick Manchester (dick.manchester) start.tx

Edit this page | Old revisions | Admin | Update Profile

Data Sharing Agreement (Ratified 3 June, 2009)

As part of the International Pulsar Timing Array (IPTA) project, we the undersigned PTA collaborations do hereby agree to share pulsar data obtained as part of the respective projects with the following terms and conditions:

1. The data is made available to the PTAs for doing PTA work only. This could be GW work, ephemerides or new time standards, but it is not for studying the properties of individual sources.
2. Nothing is to be published from these data by people who didn't take the data without the participation of people from the group that did take the data, in both the analysis process and in any resulting publications.
3. IPTA-wide projects led by graduate students will be protected from prior publication by others. Such projects must be agreed to by the IPTA collaboration and the protection will be reviewed annually by the collaboration.

+ 5 more clauses

Shared Data Release

Shared Data

This page is for data files to be shared with IPTA members.

Timing files and other relevant data for a particular data release from each PTA should be included in a single gzipped tar file with a name following the convention: "pta_release_yyyymmdd.tar.gz", where "pta" is the PTA name, "release" is an identifying name for the particular data set and "yyyymmdd" is the file creation date.

The tar file should contain a directory with the same name: "pta_release_yyyymmdd", and at least the following sub-directories: "par" "tim", "clk", "tmplt" and "other". There should also be a file "README" file in this directory giving a description of the data set and any other relevant information not contained in other areas of the tar file.

Shared Data Release

Shared Data

This page is for data files to be shared with IPTA members.

Timing files and other relevant data for a particular data release from each PTA should be included in a single gzipped tar file with a name following the convention:

Detailed specifications for these files are given in the link below.

* Shared Data Specifications

For information about uploading files, please read this page on the media manager.

Edit

Data Files

PTA	File
EPTA	
NANOGrav	
PPTA	ppta_dr1_20120604.tar.gz ppta_dr1e_20120604.tar.gz ppta1.pdf

IPTA Publication Policy

1) Projects using or interpreting shared non-public IPTA data, hereafter "IPTA projects," must be approved by the IPTA Steering Committee and listed on the password-protected IPTA Projects website with a provisional title, abstract and list of principal authors for associated papers. IPTA data (hereafter "data") is any previously unreleased pulsar timing data from two or more PTA members of the IPTA.

2) Each PTA will recommend who among its members will be an author on an IPTA paper. Authorship order will be determined by the IPTASC considering any recommendation by the group of principal authors. There may be a small lead group of authors followed by a larger group of other authors listed alphabetically, or it may be a fully alphabetical list. Authorship will include at least everyone who contributed significantly to obtaining, processing, managing and/or interpreting the data discussed in the paper. Other contributions may also be worthy of authorship.

3) Any member of an IPTA PTA can request inclusion in the group of principal authors for a given project. Such requests will be decided by the IPTASC considering any recommendation by the existing group of principal authors.

+ 6 more clauses

IPTA Projects

This page lists projects that have been approved by the IPTA Steering Committee under the rules of the IPTA Publication Policy.

- Pulsar Timescale Project (George Hobbs)

Page for submitted projects pending IPTASC approval soon

- IPTA combined data sets
- GW stochastic background limit
- Future projections for GW detection
- Characterising MSP timing noise
- Etc, etc …..

IPTA Projects

This page lists projects that have been approved by the IPTA Steering Committee under the rules of the IPTA Publication Policy.

- Pulsar Timescale Project (George Hobbs)

Page for submitted projects pending IPTASC approval soon

- IPTA combined data sets
- GW stochastic background limit
- Future projections for GW detection
- Characterising MSP timing noise
- Etc, etc …..

Submit more projects!

Future Development

- More shared ToA data
- Access to “raw” shared data
- New Projects (e.g. SKA 1 timing)
- New Working Groups (e.g. Simulations group)
- New Data Challenges
- New PTAs

More ideas!

Future IPTA Meetings

- 2013: Organised by EPTA

  In Thailand, Sheraton Krabi Beach Resort, June17-28

Future IPTA Meetings

- 2013: Organised by EPTA

  In Thailand, Sheraton Krabi Beach Resort, June17-28

Future IPTA Meetings

- 2013: Organised by EPTA

  In Thailand, Sheraton Krabi Beach Resort, June17-28

Future IPTA Meetings

- 2013: Organised by EPTA

  In Thailand, Sheraton Krabi Beach Resort, June17-28

- 2014: Organised by NANOGrav
- 2015: Organised by PPTA, probably in South Africa

Future IPTA Meetings

- 2013: Organised by EPTA

  In Thailand, Sheraton Krabi Beach Resort, June17-28

- 2014: Organised by NANOGrav
- 2015: Organised by PPTA, probably in South Africa

The IPTA is key to the future of pulsar science - be part of it!

The IPTA is key to the future of pulsar science - be part of it!