

## **INTER-UNION (IAU–URSI) IAU DIVISION B HISTORICAL RADIO ASTRONOMY WORKING GROUP**

<b>CHAIR</b>	<b>Leonid Gurvits. (The Netherlands)</b>
<b>VICE-CHAIR</b>	<b>Tim Robishaw (Canada)</b>
<b>EXECUTIVE OFFICERS</b>	<b>Past-chair – Richard Schilizzi (UK)</b>
	<b>Secretary – Kenneth Kellermann (USA)</b>
	<b>Web manager – Ellen Bouton (USA)</b>

### **ANNUAL REPORT 2022**

#### **1. Purpose of the WG**

The WG was first established in 2003 as an IAU Commission 40 WG, and continued as a Joint Commission B4-C3 WG through 2021. From 2021 it continued within IAU as a WG of Comm B. Since the URSI General Assembly in 2014, it has been a joint WG of the IAU and URSI. The Working Group’s aims are to

- maintain an ongoing bibliography of publications relevant to the history of radio astronomy;
- collect and make publicly accessible materials (slides) or video/audio records of presentations on the history of radio astronomy;
- document the careers of deceased radio astronomers in biographical memoirs; as of today, more than 150 names are listed in the database;
- document and preserve surviving historically-significant radio telescopes and associated instrumentation.

All the materials above are accessible through the WG web site <https://rahist.nrao.edu> hosted by the National Radio Astronomy Observatory.

The group’s work is conducted by the five members of the Executive committee, 12 members of the WG Organising Committee and 37 WG members. The WG consists of representatives of 15 countries. 14 WG members are “national/regional reporters” responsible for keeping track of developments of relevance to the WG in their respective countries or regions.

#### **2. Events organised by the WG**

**2.1).** The WG organised a session on “The Impact of Radio Astronomy on Technology and Society” at the URSI General Assembly in Rome, on 2 September 2021. Although this session is nominally outside the reporting here year of 2022, this session is included in the current report since it has not been reported earlier. Five talks were given at this session either in person or remotely. These were:

- The Path to a High-Speed Wireless Internet, David Skellern, RoZetta Institute, Australia;

- Jodrell Bank during the Cold War, Simon Garrington and Tim O’Brien, University of Manchester, UK;
- VLBI for Geodesy, Astrometry, and Navigation, Megan Johnson and Bryan Dorland, Naval Research Laboratory, USA;
- Deep Space Navigation – Leveraging Experience from Radio Astronomy, Les Deutsch, Joseph Lazio and Stephen Lichten, Jet Propulsion Laboratory, USA; The
- Parkes Dish and the First Moonwalk, Jasper Wall, University of British Columbia, Canada.

Three of the above talks are available at the WG webpage

<https://rahist.nrao.edu/HRAWG-meeting-reports.shtml>.

**2.2).** The WG organised a session “History of Radio Astronomy in Eastern Asia” at the IAU General Assembly in Busan, Korea, on 5 August 2022. Eight talks were given in person or remotely. These were:

- Radio astronomy developments in Republic of Korea, Se-Hyung Cho, KASI, Seoul, R. of Korea;
- Radio astronomy in Japan: 1950s – 1980s, Masato Ishiguro, NAOJ, Tokyo, Japan;
- Developments of VLBI in Japan, Hideyuki Kobayashi, NAOJ, Tokyo, Japan;
- 25 years of the VSOP/HALCA launch, Hisashi Hirabayashi, ISAS/JAXA, Sagami-hara, Japan;
- History of radio astronomy in Taiwan, Paul Ho, ASIAA, Taipei, China/Taipei;
- History of radio astronomy in China: from early days to SKA and FAST, Bo Peng, NAOC, Beijing, China/Nanjing;
- History of VLBI in China, Zhiqiang Shen, ShAO, Shanghai, China/Nanjing;
- History of mm and sub-mm astronomy in China, Ji Yang, Purple Mountain Astronomical Observatory, Nanjing, China/Nanjing

All eight presentations are publicly available as audio/video recordings and sets of slides at the WG web site <https://rahist.nrao.edu/HRAWG-meeting-reports.shtml>.

**2.3).** Several members of the WG participated in preparatory activities of Scientific Organizing Committees of the following two conferences with substantial historical contents:

- “The Universe: from the Big Bang to Present Days”, dedicated to the 90th birthday of Nikolai Kardashev (1932–2019), Lebedev Physical Institute, Moscow, Russia, 25–26 April 2022;
- “A Multi-facet Universe: Theory and Observations – 2022”, dedicated to the 90th birthday of Yuri Pariiskii (1932–2021), Special Astrophysical Observatory, Nizhnii Arkhyz, Russia, 23–27 May 2022.

However, after the Russian military invasion in Ukraine on 24 February 2022, the Working Group as a whole and its non-Russian members have suspended their involvement in these two events.

### 3. Publications

The Master List of Publications in the field of Historical Radio Astronomy can be found on the Working Group’s website <https://rahist.nrao.edu> under the heading Resources – History of Radio Astronomy. By the time of this reporting, the Master List includes more than 320 articles published in various journals and conference proceedings through 2022.

Several books on history of radio astronomy are approaching production in 2023–2024. These books will be reported in the next annual and triennial reports.

Presentations on historical radio astronomy topics were given at a number of conferences or in conference are listed at the WG website <https://rahist.nrao.edu/HRAWG-talks.shtml>.

#### 4. Radio astronomy archives

The NRAO/AUI Archives (<https://www.nrao.edu/archives/>) collects and provides access to institutional records of NRAO and to papers of many individual radio astronomers in both digital and traditional formats, provides supplemental electronic materials for books and articles of historic interest (<https://science.nrao.edu/about/publications>), and maintains the Web pages for the IAU/URSI WG on Historical Radio Astronomy (<https://rahist.nrao.edu/>). The CSIRO Radio Astronomy Image Archive (<https://www.atnf.csiro.au/ImageArchive/index.html>) is a collection of over 15,000 images that relate to the early history of radio astronomy in Australia.

#### 5. Preservation of historical radio-astronomical equipment

**5.1.)** The Holmdel horn antenna used by A. Penzias and R. Wilson to discover the cosmic microwave background is under the threat of destruction to make way for a proposed housing development on the site. The WGHRA has been active in seeking solutions for the preservation of this historically important radio telescope.

**5.2.)** Members of the WG participate in efforts to preserve historical artefacts of the W. Gordon Arecibo 300-m radio telescope of the Arecibo Observatory (Puerto Rico) after its collapse on 1 December 2020.

**5.3.)** Members of the WG participate in securing the digital archive of the observing data and related auxiliary information from the low-frequency Ukrainian T-shaped Radio telescope UTR-2 operated by the Institute of Radio Astronomy of the Ukrainian National Academy of Sciences (RI NANU), Kharkiv, Ukraine. The telescope and its laboratory building with various operational instrumentation were heavily damaged during the occupation of the area by the Russian armed forces in the period February–September 2022. The reconstruction and archiving work began after the liberation of the area in September 2022.