

COMMISSION-B2

DATA AND DOCUMENTATION

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DIVISION B WORKING GROUPS

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Virtual Observatory

TRIENNIAL REPORT 2021-2024

1. Background

In 2021, a functional working group was established on the Virtual Observatory in Division B (Facilities, Technology and Data Science) of the IAU. It provides the liaison between the International Virtual Observatory Alliance (IVOA) and the International Astronomical Union (IAU). The IVOA is an organization, composed of 22 international member initiatives, that develops and maintains the technical standards needed to find, access, interoperate and re-use astronomy data (according to FAIR principles), thus realizing the Virtual Observatory (VO). The IVOA also acts as a framework for discussing and sharing VO ideas and technology, for engaging astronomy projects, missions and researchers, and as a body for promoting and publicizing the VO. The VO is now a mature framework for the interoperability of astronomy data, with IVOA compliant services operated by astronomy data centers worldwide. This functional working group will provide a communication channel between the IVOA and the IAU on topics of FAIR-compliant standards, use of the VO for scientific research, and for promoting best practices for interoperability of data and services in Astronomy.

Chair: Dr G. Bruce Berriman (Caltech/IPAC, USA),

Committee: Prof. Sudhanshu Barway (Indian Institute of Astrophysics, Bangalore), Dr. Sebastian Gurovich (National University of Cordoba, Argentina), Dr. Areg Mickaelian (Byurakan Astrophysical Observatory), Dr Patricia Whitelock (SAAO, South Africa),

2. Specific Objectives

These include:

- Participation in IAU General Assemblies (GAs), including:
 - Supporting the organization of meetings within Division B, chairing sessions and giving presentations.
 - Supporting the organization of other meetings at IAU GAs, giving presentations and co-authoring papers as appropriate
 - Proposing to hold VO-specific Focus Sessions etc.

- Providing feedback to the IVOA on where IAU activities can inform technical priorities.
- Encouraging VO contributions to IAU Symposia

3. Activities

The working group organized a session on “IVOA engagement with the IAU” at the May 2022 virtual Interoperability meeting. The following presentations were made:

- Gabriele Giovannini (Division B President) - “IAU Division B structure and possible connections with IVOA”
- Marie-Lise Dubernet (IAU Lab Astro WG Chair) - “FAIR usage of Atomic and Molecular Data in Astro Applications: Role of IVOA”
- Vanessa McBride (OAD) - “The IVOA in support of astronomy for development”?
- Chenzhou Cui (Division B Data and Documentation President) - “VO resources for astronomical education and collaboration prospects”

The working group was active in the IAU General Assembly:

- Berriman acted as Co-chair of Division B Meeting at IAU General Assembly 2022.
- Three presentations were given at the General Assembly:
 - “Enabling Science with Virtual Observatory,” at the Division B Facilities, Technologies and Data Science meeting.
 - “FAIR principles in IVOA,” at the Division B Laboratory Astrophysics commission meeting.
 - “Future Role of Archives: IVOA perspective” at the Executive Committee Working Group: global coordination of ground and space meeting.

The group has been active in the Commissions B5-B2 / Working Group “Laboratory Astrophysics Data Compilation, Validation and Standardization: from the Laboratory to FAIR usage in the Astronomical Community”:

- Berriman acted as Vice-Chair of the Working Group.
- The WG interacted with the IVOA to A&M data citation be considered in future IVOA standards.
- Berriman was the co-chair at a session the IAU GA, Busan 2022, entitled “Laboratory Astrophysics Databases: from the provider to the user: encouraging FAIRness”.
- The session led to two papers that will be included in the proceedings of the Symposium “IAUS 371: Honoring Charlotte Moore Sitterly: Astronomical spectroscopy in the 21st century” and in which WG members are co-authors:
 - Dubernet, M.L., Berriman, G.B., Boersma, C. et al. 2024a, IAU 371 Symposium Proceedings, “IAU B2-B5 inter-commission working group session”, 8th August 2022, IAU 2022 General Assembly, Busan, Eds Soderblom, D and G. Nave; doi = 10.1017/S1743921323000327, to be published April 2024
 - Dubernet, M.L., Berriman, G.B., Barklem, C. et al. 2024b, IAU 371 Symposium Proceedings, “Atomic and Molecular Databases Open Science for a sustainable world”, 8th August 2022, IAU 2022 General Assembly, Busan, Eds Soderblom, D and G. Nave; doi = 10.1017/S1743921323000261, to be published April 2024

4. Future Activities

The WG plans to be active in the upcoming General Assembly, taking part in Division B activities. The WG has been invited to submit an abstract to the Focus Session on “Harnessing ground-based optical telescopes: an opportunity for emerging astronomy in Africa.”

In 2021, the IUA-OAD signed an MoU with the IVOA to “advance the application of astronomical data and technology use in different areas of society “ (<https://www.astro4dev.org/mou-signed-with-international-virtual-observatory-alliance/>). In future, the WG will play a larger role in educational activities of the IAU.

G. Bruce Berriman
Chair, Division B Working Group on the Virtual Observatory