

Proceedings of the International Astronomical Union

Proceedings of the Thirty-First General Assembly Busan 2022

Edited by

José Miguel R. Espinosa Debra Meloy Elmegreen

ISSN 1743-9213

International Astronomical Union



CAMBRIDGE UNIVERSITY PRESS



TRANSACTIONS OF THE INTERNATIONAL ASTRONOMICAL UNION VOLUME XXXI

PROCEEDINGS OF THE THIRTY-FIRST GENERAL ASSEMBLY BUSAN 2022

COVER ILLUSTRATION:

Milky Way Arch over La Palma

This image, which shows the majestic band of the Milky Way and a range of culturally signicant patterns, was taken in May 2022 at a very high altitude from the Roque de los Muchachos Observatory in La Palma, from which one can see the clouds below. Some prominent star patterns include Scorpius, Sagittarius, Lyra, Cygnus, Aquila, the Summer Triangle asterism, and the Teapot asterism.

Credit: Amirreza Kamkar/IAU OAE

DOI: 10.5281/zenodo.7422867

IAU SYMPOSIUM PROCEEDINGS SERIES

Chief Editor

DR. JOSÉ MIGUEL R. ESPINOSA, General Secretary
Instituto de Astrofísica de Canarias

C. Vía Láctea, s/n,
38205 La Laguna,
Santa Cruz de Tenerife,
Spain
iau-general.secretary@iap.fr

Editor
DIANA MARY WORRALL, Assistant General Secretary
University of Bristol
HH Wills Physics Laboratory
Tyndall Avenue
Bristol BS8 1TL
United Kingdom
IAU-assistant.general.secretary@iap.fr

INTERNATIONAL ASTRONOMICAL UNION UNION ASTRONOMIQUE INTERNATIONALE

International Astronomical Union



TRANSACTIONS OF THE INTERNATIONAL ASTRONOMICAL UNION VOLUME XXXI

PROCEEDINGS OF THE THIRTY-FIRST GENERAL ASSEMBLY BUSAN 2022

Edited by

JOSÉ MIGUEL R. ESPINOSA

IAU General Secretary (2021–2023)

and

DEBRA MELOY ELMEGREEN

IAU President (2021–2024)



CAMBRIDGE UNIVERSITY PRESS University Printing House, Cambridge CB2 8BS, United Kingdom 1 Liberty Plaza, Floor 20, New York, NY 10006, USA 10 Stamford Road, Oakleigh, Melbourne 3166, Australia

© International Astronomical Union 2025

This book is in copyright. Subject to statutory exception and to the provisions of relevant collective licensing agreements, no reproduction of any part may take place without the written permission of the International Astronomical Union.

First published 2025

Printed in Great Britain by Henry Ling Limited, The Dorset Press, Dorchester, DT1 1HQ

Typeset in System LATEX 2ε

 $A\ catalogue\ record\ for\ this\ book\ is\ available\ from\ the\ British\ Library\ of\ Congress\ Cataloguing\ in\ Publication\ data$

This journal issue has been printed on FSC^{TM} -certified paper and cover board. FSC is an independent, non-governmental, not-for-profit organization established to promote the responsible management of the world's forests. Please see www.fsc.org for information.

 $\begin{array}{c} {\rm ISBN} \ 9781009433334 \ {\rm hardback} \\ {\rm ISSN} \ 1743\text{-}9213 \end{array}$

For EU product safety concerns, contact us at Calle de José Abascal, 56, 1°, 28003 Madrid, Spain, or email eugpsr@cambridge.org

Table of Contents

Prefac	ce	viii
Chapt	er I: Business Sessions I and II	1
1	Agenda of the Business Meetings	
2	Proposed Resolutions and Changes to Bye-laws	
3	New National Members	
4	New Honorary Members	
5	Outgoing and Incoming Committee Members	
	5.1 Incoming Executive Committee	
	5.2 Secretariat	
	5.3 Outgoing Executive Committee	
	5.4 Incoming Division Presidents	
	5.5 Outgoing Division Presidents	
	5.6 Incoming Special Nominating Committee	
	5.7 Incoming Finance Committee	
	5.8 Executive Committee Working Group Liaisons	
	5.9 Executive Committee Functions	
	5.10 Executive Committee Members of Steering Committees of IAU	
	Offices	
6	Letter for IAU Commissions encouraging On-line meetings	
7	Brief Remarks by Outgoing President Prof. Ewine van Dishoeck	
8	Brief Remarks by Incoming President Prof. Debra Elmegreen	
9	Brief Remarks by Incoming General Secretary Prof. José Miguel R. Espinosa	
10	Closing the Session	
Chant	er II: Inaugural Ceremony	13
опара 1	The International Astronomical Union	10
2	Agenda for "Astronomy For All" Opening Ceremony	
3	Opening Address by President Debra Elmegreen	
4	Brief Reflections on the Past Triennium: Ewine van Dishoeck	
5	Brief Reflections on the Past Triennium: Teresa Lago	
6	Prizes	
U	6.1 Gruber Prize Foundation	
	6.2 ODE Prize	
	6.3 PhD Prizes	
7		
7 8	End of the Opening Ceremony Astronomy in Korea	
0	·	
	8.1 Ancient Astronomy	
0	8.2 King Sejong the Great (1418-1450) and Joseon Dynasty	
9	Korean Astronomical Society	
10	Korean Astronomy & Space Science Institute	
11	Main Sponsors of the General Assembly	
	11.1 Other Sponsors and Supporters	
10	11.2 Sponsors of Public Lectures	
12	Exhibitors	
13	IAU22 General Assembly logo	

vi Contents

14

The Press

	14.1 Media	
	er III: Special Presentations, Plenary Discourses, and Social	32
1	Division Meetings	_
2	Prize Lectures	
	2.1 Recipients of the Kavli Foundation Prize	
	2.2 Recipients of the Shaw Foundation Prize	
3	Invited Discourses	
4	Symposium Plenary Lectures	
5	Focus Meetings	
6	Public Lectures	
7	Social Events	
	7.1 Young Astronomers Lunch	
	7.2 Women in Astronomy Lunch	
	7.3 Conference Dinner	
Chapte	er IV: Closing Ceremony	38
1	Introduction	00
2	Busan Closing Ceremony Remarks from the NOC Chair	
3	Closing Remarks from the IAU President	
4	Closing Remarks from the IAU General Secretary	
5	Address by the Assistant General Secretary	
6	Address by the President-Elect	
7	Flag Handover Ceremony and Invitation to the XXXII nd General Assembly	
	in 2024	
8	Farewell Dance	
9	Image Archive	
Chante	er V: Resolutions of the XXXIst General Assembly	44
1	Resolutions Committee (2018-2021)	-1-1
2	Approved Resolutions	
-	Tippiovod Toobordvionio	
Chapte	er VI: Executive Committee Report	55
1	Introduction	
2	Activities of the IAU Offices	
	2.1 Office of Astronomy for Development (OAD)	
	2.2 Office of Astronomy for Education (OAE)	
	2.3 Office of Astronomy Outreach (OAO)	
	2.4 Office of Young Astronomers (OYA)	
3	Financial Report 2019–2021 and Budget Projection 2022–2024	
	3.1 The Rational for the Forecast	
	3.2 Information on the management of the accounts	
	3.3 Bank Assets as of December 31, 2021	
	3.4 Sources of Income	
	3.5 Expenditures	
	3.6 Summary 3.7 IAU Fundraising Activities 2019-2022	
	3.7 TAU Fundraising Activities 2019-2022	
Chapte	er VII: IAU Statutes, Bye-laws, and Working Rules	68
1	IAU Statutes	
2	Statuts de l'UAI, Busan, 2 Août 2022	

Contents vii

3	IAU Bye-Laws
4	Règlement intérieur de l'UAI, Busan, 2 Août 2022
5	IAU Working Rules
Chapte	er VIII: Divisions, Commissions, and Working Groups 103
1	Division A - Fundamental Astronomy
2	Division B - Facilities, Technologies and Data Science
3	Division C - Education, Outreach and Heritage
4	Division D - High Energy Phenomena and Fundamental Physics
5	Division E - Sun and Heliosphere
6	Division F - Planetary System and Astrobiology
7	Division G - Planetary System and Astrobiology
8	Division H - Interstellar Matter and Local Universe
9	Division J - Galaxies and Cosmology
10	Executive Committee Working Groups
11	Commission Working Groups
12	Inter-Commission Working Groups
Chapte	er IX: New and Deceased IAU Members
1	New IAU Members
	1.1 New Junior Members
	1.2 New Individual Members
2	Deceased Members (2019–2021) Remembered

Preface

The IAU Transactions series report the activities that take place during the General Assembly (GA). These reports record all the essential decisions taken by the main governing body of the IAU: the approval of the financial accounts and of the proposed budget for the next triennium, the admission of new National Members and Individual members, the evaluation of Division and Commission reports, the approval of Resolutions, etc.

The GA should have taken place in 2021; unfortunately, it was set in disarray by the pandemic. The pandemic pervades everything. As a result, the Business Meetings took place virtually in 2021, and this is why the Executive Committee, in consultation with the South Korean Local Organising Committee, and especially Prof. Hyesung Kang, agreed to postpone the XXXIst General Assembly of the International Astronomical Union (IAU). So, in 2022 the IAU celebrated its General Assembly in Busan, South Korea. The General Assembly also welcomed the admission of 1956 new Individual and Junior Members.

A sincere thanks to the organisers for having prepared such a wonderful and enlightening General Assembly, including the added challenge of hybrid physical-remote attendance. Indeed, the hybrid sessions must have been difficult to organise. I thank them also for the preparation of the local events and outings. And all of this following a pandemic.

José Miguel Rodríguez Espinosa, General Secretary (2021–2023)

Additional Note

At the XXXth General Assembly in Vienna in 2018, Ian Robson was elected Assistant General Secretary and I was elected President-elect. Ian resigned in 2019. José Miguel Rodríguez Espinosa was appointed in his place, and became General Secretary in 2021. He resigned in October 2023, so I carried out the final edits of these Transactions over the subsequent months. I am grateful to José Miguel for his efforts on this volume.

Debra Meloy Elmegreen, President (2021–2024)