

Classical Observatories & UNESCO World Heritage





Figure 0.1:
Domes and Buildings of Hamburg Observatory
(Photos: Gudrun Wolfschmidt)

Nuncius Hamburgensis
Beiträge zur Geschichte der Naturwissenschaften
Band 64

Wolfschmidt, Gudrun (ed.)

Classical Observatories & UNESCO World Heritage

Proceedings of the Workshop of the IAU Commission
C.C4 World Heritage & Astronomy and the WG
*Windows to the Universe – Classical and Modern
Observatories* in Hamburg Observatory, University of
Hamburg, August 31, 2025



Ahrensburg near Hamburg: tradition 2026

Nuncius Hamburgensis

Beiträge zur Geschichte der Naturwissenschaften

Hg. von Gudrun Wolfschmidt, GNT, Universität Hamburg
(ISSN 1610-6164).

This title was inspired by „Sidereus Nuncius“ and by „Wandsbeker Bote“.

Wolfschmidt, Gudrun (ed.): Classical Observatories & UNESCO World Heritage. Proceedings of the Workshop of the IAU Commission C.C4 *World Heritage & Astronomy* and the WG *Windows to the Universe – Classical and Modern Observatories* in Hamburg Observatory, University of Hamburg, August 31, 2025. Ahrensburg: tredition (Nuncius Hamburgensis – Beiträge zur Geschichte der Naturwissenschaften, Band 64) 2026.

Front Cover: (Photo: Gudrun Wolfschmidt)

Frontispiece: (Photo: Gudrun Wolfschmidt)

Back Cover:

This volume was supported by the Hans Schimank Memorial Foundation.

Prof. Dr. Gudrun Wolfschmidt, Center for History of Science and Technology, Hamburg Observatory, University of Hamburg
Bundesstrasse 55, Geomatikum, D-20146 Hamburg, Germany

<https://www.fhsev.de/Wolfschmidt/>

<https://www.fhsev.de/Wolfschmidt/GNT/home-wf.htm>.

© 2026 Gudrun Wolfschmidt

Druck und Distribution im Auftrag der Autorin: tredition GmbH,
Heinz-Beusen-Stieg 5, 22926 Ahrensburg, Germany

Das Werk, einschließlich seiner Teile, ist urheberrechtlich geschützt. Für die Inhalte ist die Autorin verantwortlich. Jede Verwertung ohne ihre Zustimmung ist unzulässig. Dies gilt insbesondere für Vervielfältigungen, Übersetzungen, Mikroverfilmungen und die Einspeicherung und Verarbeitung in elektronischen Systemen. Die Publikation und Verbreitung erfolgen im Auftrag der Autorin, zu erreichen unter: Gudrun Wolfschmidt, Grindelberg 77, 20144 Hamburg, Deutschland.

Kontaktadresse nach EU-Produktsicherheitsverordnung:

gudrun.wolfschmidt@uni-hamburg.de.

ISBN – (Softcover), (Hardcover).

Contents

Preface: Classical Observatories & UNESCO World Heritage	
<i>Wolfschmidt, Gudrun (Hamburg) & Michael Burton (Armagh, UK)</i>	12
0.0.1 Aims and Scope – Classical Observatories & UNESCO World Heritage	12
0.0.2 Contributions	14
INTRODUCTION	14
1 The Historic Astronomical Observatories of Ireland	
<i>Michael Burton (Armagh, UK)</i>	17
1.1 Introduction	18
1.1.1 <i>Armagh Observatory, Armagh, UK</i>	18
1.1.2 <i>Birr Castle, Ireland</i>	19
1.1.3 <i>Dunsink Observatory, Dublin, Ireland</i>	19
1.2 Potential <i>Outstanding Universal Value</i>	22
1.3 Criteria supporting the potential Outstanding Universal Value	25
1.4 Authenticity and Integrity	28
1.4.1 <i>Armagh Observatory</i>	28
1.4.2 <i>Birr Castle Demesne</i>	29
1.4.3 <i>Dunsink Observatory</i>	30
1.5 Comparisons with Similar Properties	31
1.5.1 UNESCO World Heritage Sites with an Astronomical Connection	32
1.6 Status of the Nomination	33
1.7 References	35
2 The “Alliance of Historic Observatories” (AHO)	
<i>Paul Gabor (Città del Vaticano, Vatican City) & Annie Mejía (California Institute of Technology)</i>	39
ITALIAN OBSERVATORIES	43

3	From the Gregorian Tower to the Vatican Observatory <i>Paul Gabor (Città del Vaticano, Vatican City)</i>	45
3.1	Introduction	45
3.1.1	The words “ <i>Specola</i> ” and “Observatory”	46
3.1.2	The toponym “Vatican”	47
3.2	Early Modern	48
3.2.1	The Gregorian Tower	48
3.2.2	Clavius & the Roman College	49
3.2.3	Kircher	50
3.2.4	Bianchini	51
3.3	Enlightenment	51
3.3.1	Jacquier	51
3.3.2	Boscovich & Maire	52
3.3.3	Giuseppe Calandrelli	52
3.4	XIX th Century	52
3.4.1	Filippo Gili	52
3.4.2	Campidoglio	53
3.4.3	Ignazio Calandrelli	53
3.4.4	Angelo Secchi	53
3.5	The Renewed <i>Specola Vaticana</i>	54
3.5.1	Vatican Observatory and the Jesuits	56
3.6	Castel Gandolfo	58
3.7	Arizona – Vatican Advanced Technology Telescope	58
3.8	Conclusion	60
3.9	References	62
4	La Specola of Padua: A Living Observatory of Outstanding Astronomical Heritage <i>Valeria Zanini (Padua, Italy)</i>	67
4.1	Introduction:	67
4.2	Bibliography	67
5	Chasing forgotten Astronomical Observatories in Rome <i>Giangiacomo Gandolfi, Marco Faccini, Tiziana Macaluso & Roberto Danizi (Rome, Italy)</i>	69
5.1	Introduction:	69
5.2	Bibliography	69

6 Architecture and the Sky: the Digital Reconstruction of the Astronomical Observatory on the Campidoglio in Rome <i>Michele Calvano, Flavia Camagni, Elena Ippoliti, Giangiacomo Gandolfi & Marco Faccini (Rome, Italy)</i>	71
6.1 Introduction:	71
6.2 Bibliography	71
7 From the “tin can” on top of the Capitol Hill, to the domes of the Astronomical Observatory of Rome <i>Marco Faccini, Giangiacomo Gandolfi, Tiziana Macaluso & Roberto Danizi (Rome, Italy)</i>	73
7.1 Introduction:	73
7.2 Bibliography	73
8 Trieste Astronomical Observatory and the Reinfelder Telescope: Historic Roots and Present-Day Structure between City and Basovizza <i>Marco Citossi & Giulia Iafrate (Trieste, Italy)</i>	75
8.1 Introduction:	75
8.2 Bibliography	75
MORE EUROPEAN OBSERVATORIES	75
9 Greenwich Observatory as part of Unesco “Maritime Greenwich” <i>Dorian Knight (Greenwich, UK)</i>	77
9.1 Introduction:	77
9.2 Bibliography	77
10 Royal Observatory of Navy in San Fernando, Spain <i>Yolanda Muñoz Rey (Cádiz, Spain)</i>	79
10.1 Introduction	80
10.2 The ROA in the 18 th and 19 th centuries	80
10.3 The ROA in the 20 th century	83
10.4 The ROA today	84
10.5 Historical Heritage in ROA	85
10.6 Classical Observatories and UNESCO World Heritage	87
10.7 Conclusions	91
10.8 Bibliographic References	93

11	Astronomical Heritage in the Baltic Region – The IAU List <i>Outstanding Astronomical Heritage</i> <i> Gudrun Wolfschmidt (Hamburg, Germany)</i>	95
11.1	Introduction to Cultural Heritage of Observatories	96
11.2	Early Observatories and Astronomical Heritage in the Baltic	98
11.2.1	Copernicus’ Observing Sites in the Baltic	98
11.2.2	First European Observatories – Tycho’s Observatory Uraniborg, 1576–1580	100
11.2.3	Astronomical Clocks around the Baltic	102
11.2.4	Gottorf Globe (1650–1664) in Schleswig Castle	110
11.3	Heritage of Observatories in Academies / Universities in Hanseatic Cities, 17 th to 19 th Century	115
11.3.1	Founding of Universities around the Baltic	115
11.3.2	Open Air Observatories – Platform on the Roof	116
11.3.3	Baroque Tower Observatories	118
11.3.4	Observatories around 1800	121
11.4	Observatories in the 19 th century – Octagon, Greek or Latin Cross, and Three Dome Façade	125
11.4.1	Octagonal Shape – Inspired by the Tower of the Winds	125
11.4.2	Observatories in the Shape of a Greek or Latin Cross	126
11.5	Method – Collection and Database structure of the OAH	130
11.5.1	Collection	130
11.5.2	IAU List: Outstanding Astronomical Heritage – Database structure	131
11.6	Analysis of Observatories from Renaissance to 20 th Century	132
11.7	Astronomical Heritage – Unesco or OAH?	133
11.8	Aims and Planned Future Activities	136
11.9	Bibliography	137
12	The Astronomical Clock in the Uppsala Cathedral and the Graham Clock at the Astronomical Observatory Uppsala <i>Göran Henriksson, Uppsala, Sweden)</i>	143
12.1	Introduction	143
12.2	The Astronomical Clock in the Uppsala Cathedral	145
12.3	The Graham Clock at the Uppsala Observatory <i>Celsiushuset</i>	146
12.4	Discussion	152
12.5	Summary	152
12.6	References	153

13 The Pic du Midi Observatory enlisting to WH: Case study	
<i>Eric Delgado (Pic du Midi, France)</i>	155
13.1 Introduction:	155
13.2 Bibliography	155
14 Heritage of Ukrainian Observatories	
<i>Svitlana Kolomiyets (Kharkiv, Ukraine)</i>	157
14.1 Introduction:	157
14.2 Bibliography	157
15 The Observatory of the Lübeck Maritime School	
<i>Björn Kunzmann (Hamburg, Germany)</i>	159
15.1 Introduction:	159
15.2 Bibliography	159
OBSERVATORIES IN ASIA, AFRICA, AND AMERICA	159
16 Byurakan Astrophysical Observatory relations to UNESCO heritage	
<i>Areg Mickaelian (Byurakan Astrophysical Observatory, Armenia)</i>	161
16.1 Introduction:	161
16.2 Bibliography	161
17 Korean Observatories from Cheomseongdae to Ganui-dae, Joseon Dynasty	
<i>Yang Hyun Choi (Hamburg, Germany – Korea)</i>	163
17.1 Introduction:	163
17.2 Bibliography	163
18 The South African Astronomical Observatory: A Historic and Scientific Landmark	
<i>Daniel Cunnama (Cape Town, SAAO, South Africa)</i>	165
18.1 Introduction:	165
18.2 Bibliography	165
19 The former Observatorio Astronómico y Meteorológico del Estado de Jalisco and its Library: the Mutual Spread of Astronomical Knowledge between México and Europe – Towards the Recognition of Astronomical Heritage	
<i>Durruty Jesús De Alba Martínez & Mónica Martínez Borrayo (Guadajara, Mexico)</i>	167
19.1 Introduction:	167

19.2 Bibliography	167
HERITAGE AND OUTREACH	167
20 Astronomy outreach as lifesaver of historical observatories <i>Begoña Anahí Caldú Primo (Vienna, Austria)</i>	169
20.1 Introduction:	169
20.2 Bibliography	169
21 From Santini to Gaia: the improvement of the modern astrometric data with the use of XIX century stellar catalogue <i>Federico Di Giacomo Simone Zaggia & Valeria Zanini (Padova, Italy)</i>	171
21.1 Introduction	172
21.2 Giovanni Santini, third director of the Padua Astronomical Ob- servatory	173
21.3 The Starke Meridian Circle: technical evolution and instrumen- tal design	175
21.4 The Paduan Catalogues: Methodology and Scientific Significance	177
21.5 Data Analysis: comparing 19 th century observations with Gaia DR3	178
21.5.1 Analysis of the Paduan Catalogues content	178
21.5.2 Analysis methodology	179
21.5.3 Analytical procedure and results	180
21.5.4 Proper Motion Analysis	183
21.6 Conclusion	185
21.7 Bibliography	185
22 Welcome to Hamburg – Gateway to the World <i>Gudrun Wolfschmidt (Hamburg)</i>	189
22.1 Excursion, Saturday, August 30, 2025	191
22.1.1 Long Night of Museums in Lübeck, 18–24 h	193
23 Programme of the Workshop <i>Classical Observatories & UNESCO World Heritage</i>	195
23.0.1 SOC – Scientific Organizing Committee	195
23.0.2 LOC – Local Organizing Committee	195
23.0.3 Assistants – Helfer	195
23.1 Hamburg Observatory, Sunday, August 31, 2025	196
23.1.1 1 st Session – 10:00–11:05 h Lectures	196
23.1.2 2 nd Session – 11:30–12:50 h Lectures	197

23.1.3 3 rd Session – 14:00–15:00 h Lectures	198
APPENDIX: GENERAL INFORMATION	201
24.1 Links	201
24.2 Museums and Collections in Hamburg University and in Hamburg	202
24.2.1 Museums and Collections in Hamburg University	202
24.2.2 Museums in Hamburg	203
Authors	207
Nuncius Hamburgensis	216
Index	225