



PALERMO

September 18 – 22, 2023



# BOOK OF ABSTRACTS



**42<sup>nd</sup> Scientific Instrument Symposium**

Through Ages, Cultures, Concepts:  
Instruments in Collections, Books, Archives

## **XLII SIC Symposium**

PALERMO, 18 – 22 September 2023

### **Scientific Organizing Committee**

*SIC Board:* Roland Wittje (Indian Institute for Science and Technology), Tacye Phillipson (National Museums of Scotland), Louise Devoy (Royal Observatory of Greenwich); *local host:* Ileana Chinnici (INAF Osservatorio Astronomico di Palermo); *co-organizers:* Antonella Gasperini (INAF Servizio Musei Biblioteche e Archivi), Aurelio Agliolo Gallitto e Giuseppe Lazzara (University of Palermo)

### **Local Organizing Committee**

Maria Rosalia Carotenuto (*chair*), Manuela Coniglio, Maria Rita Caruso, Giulia D'Agostino, Laura Daricello, Flavio Morale, Maria Luisa Tuscano, Salvatore Speziale.

Webpage: [www.sic2023.net](http://www.sic2023.net) (by Promimpresa srl)



Scientific Instrument Commission

XLII Annual Symposium

**THROUGH AGES, CULTURES, CONCEPTS:  
INSTRUMENTS IN COLLECTIONS, BOOKS, ARCHIVES**

Palermo, 18-22 September 2023

TIME	MONDAY 18 SEPT Palazzo Stei, Rectorate	TUESDAY 19 SEPT Faculty of Theology <i>Put up posters</i>	WEDNESDAY 20 SEPT Faculty of Theology	THURSDAY 21 SEPT Faculty of Theology	FRIDAY 22 SEPT Physics Department
9:00					
9:30		19-01: Decolonising the Past, Present, and Future of Scientific Instrument Studies (2) Chair: Helmuht Trischler	20-01: Scientific Instrumentation in pre- and early-modern Islamicate societies. Astrolabes and what else? (1) Chair: Petra Schmidl	21-02: Perspectives of Engaging with Instruments (1) Chair: Charlotte New	22-01: Within the Market: On the Identity of Dealers in Scientific Instruments and the Nature of their Commodities Chair: Janet Laidla
10:00					
10:30					
11:00					
11:30					
12:00		Coffee break	Coffee break	Coffee break	Coffee break
		Poster session Chairs: Roland Wirtje and Julien Gressot	20-04: Scientific Instrumentation in pre- and early-modern Islamicate societies. Astrolabes and what else? (2) Chair: Taro Mimura	21-04: Open Challenges in the Conservation of Scientific Instruments (2) Chair: Emma Angelini	22-03: Observatories Chair: Louise Devoy
12:30					
13:00					
13:30					
14:00					
14:30					
15:00					
	Registration				
15:30	18-01: Decolonising the Past, Present, and Future of Scientific Instrument Studies (1) Chair: JC Njala	19-03: 20th Century instruments Chair: Juan-Andres Leon	20-05: 19th and 20th Century Instruments Chair: Martin Weiss	21-05: Perspectives of Engaging with Instruments (2) Chair: Stéphane Fischer	22-02: Early Modern Instruments Chair: Michael Korey
16:00	18-02: Educational Demonstrations, Projects, Investigations and Experiences with Historical Scientific Instruments (1) Chair: Panagiotis Lazos	19-04: Time Measuring Through Ages, Cultures and Contexts Chair: Jane Desborough	20-06: Visual Representations: Models, Drawings, Photography and Paintings Chair: Floor Koeleman	21-06: Late Medieval to Early Modern Instruments Chair: Taha Arslan	22-04: Biographies Chair: Kristin Halverson
16:30	Break				
17:30	Welcome Reception				
18:00					
18:30					
19:00					
19:30					
20:00					
				21-07: Scientific Instruments in Texts and Archival Sources Chair: Summer Braund	Annual General Meeting of the SIC and Farewell (plenary)
				21-08: Reconstructions and Replications Chair: Laila Zwister	
					Visits to the Collections
					Visits to the Collections
					Break
					Conference Dinner

42nd Scientific Instrument Symposium  
*Through Ages, Cultures, Concepts: Instruments in Collections, Books, Archives*  
18 - 22 September 2023, Palermo, Italy

## **BOOK OF ABSTRACTS**

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## PROGRAMME

**Mon, 18 Sept. (Palazzo Steri, Rectorate)**

**15.30 – 17.30 Parallel sessions (A, B)**

### **Session A – Sala Magna**

#### **DECOLONISING THE PAST, PRESENT, AND FUTURE OF SCIENTIFIC INSTRUMENT STUDIES (1)**

*Organized by Silke Ackermann, JC Niala, Jahnvi Phalkey and Helmuth Trischler*  
*p. 24*

Chair: *JC Niala (History of Science Museum, Oxford)*

1) What is ‘Islamic Science’ exactly?

*Silke Ackermann (History of Science Museum, Oxford)* *p. 25*

2) Safekeeping as an Alternative to Acquisition

*David Pantalony (Ingenium, Ottawa)* *p. 26*

3) (De-)colonising the Deutsches Museum: Coping with the material culture of colonial scientific objects

*Helmuth Trischler (Deutsches Museum, Munich)* *p. 27*

4) The VoH Database: An effort to reassess the transfer of astral knowledge across Eurasia before 1700

*Rana Brentjes (Max Planck Institute for the History of Science)* *p. 28*

### **Session B – Sala delle Capriate**

#### **EDUCATIONAL DEMONSTRATIONS, PROJECTS, INVESTIGATIONS AND EXPERIENCES WITH HISTORICAL SCIENTIFIC INSTRUMENTS (1)**

*Organized by Elizabeth Cavicchi and Panagiotis Lazos* *p. 34*

Chair: *Panagiotis Lazos (National and Kapodistrian University of Athens, Greece)*

1) The Museum: Hands-off or Hands-on?

*Jan Waling Huisman (Museum of the University of Groningen)* *p. 35*

2) Much ado about science!

*Flora Paparou (Upper High School of Vrillissia, Greece)* *p. 36*

3) Educational activities with the mathematical machines at school and at the University Museum

*Michela Maschietto (University of Modena e Reggio Emilia)* p. 37

4) Unifying integrals and transcendental curve tracers: a new pedagogical device collecting a historical legacy

*Pietro Milici (University of Palermo)* p. 38

**Tue, 19 Sept (Faculty of Theology)**

**9.30 – 11.30 Parallel sessions (A, B)**

**Session A - Aula Magna**

**DECOLONISING THE PAST, PRESENT, AND FUTURE OF SCIENTIFIC INSTRUMENT STUDIES (2)**

*Organized by Silke Ackermann, JC Niala, Jahnavi Phalkey and Helmuth Trischler  
Chair: Helmuth Trischler (Deutsches Museum Munich, Germany)*

1) Mahogany in the collection of the History of Science Museum

*Helen Pooley (History of Science Museum, Oxford)* p. 29

2) The “Coimbra” Portuguese mariner’s astrolabe: the instrument and notes on decolonisation

*Pedro Júlio Enrech Casaleiro (University of Coimbra)* p. 30

3) Objects as Arbiters of Justice: Weights and Measures from the Madras Presidency, 1798 – 1856

*Senthil Babu & Roland Wittje (French Institute of Pondicherry and IIT Madras)* p. 31

4) Scientific instruments for measuring the human body and their ideological use in the 19th century

*Fotini Asimakopoulou (University of Athens)* p. 32

5) Italian Cosmic-ray researches in Eritrea in the 1930s

*Sofia Talas & Fanny Marcon (Museo Poleni, Padua)* p. 33

## Session B – Aula Nunzio Russo

### EDUCATIONAL DEMONSTRATIONS, PROJECTS, INVESTIGATIONS AND EXPERIENCES WITH HISTORICAL SCIENTIFIC INSTRUMENTS (2)

*Organized by Elizabeth Cavicchi and Panagiotis Lazos*

*Chair: Elizabeth Cavicchi (Edgerton Center, MIT, USA) & Panagiotis Lazos*

1) Students of Today meet Students of the Past through their instruments, notebooks and themselves

*Elizabeth Cavicchi (Edgerton Center, MIT) p. 39*

2) Primary student teachers' engagement with a historical orrery in the context of informal science education

*Panagiotis Lazos, Constantina Stefanidou & Constantine Skordoulis (National and Kapodistrian University of Athens) p. 40*

3) From Cataloguing to Enhancement: how to involve high school students in cultural heritage management. The example with the ancient scientific instruments collections of the University of Catania

*Silvia Majorana, Maura Fugazzotto, Germana Barone et al. (University of Catania) p. 42*

4) The Human Body as Scientific Instrument. An educational approach

*George N. Vlahakis & Konstantinos Konstantopoulos (Hellenic Open University) p. 44*

5) The path of the PARABOLA

*Linnéa Bergsträsser (Europa Universität Flensburg) p. 45*

### **12.00 – 14.00 POSTER SESSION - Cloister**

*Chairs: Roland Wittje and Julien Gressot*

*In alphabetical order of (first) authors:*

1) The historical collections of scientific and didactic instruments of the Palermo Museum of Mineralogy

*Sergio Calabrese, Filippo Brugnone, Lorenza Li Vigni & Paolo Ferla (Università degli Studi di Palermo) p. 46*

2) The Ramsden Circle: some iconographic representations

*Ileana Chinnici & Manuela Coniglio (Osservatorio astronomico di Palermo) p. 47*

3) From a Prince to an Observatory, from 'The Leopard' to a museum: the many lives of a telescope in Palermo

*Manuela Coniglio (Osservatorio astronomico di Palermo) p. 48*



- 4) Observatories across the miles: how astronomers at Palermo and Greenwich worked together through the 19<sup>th</sup> century to share knowledge, data and instruments  
*Louise Devoy (Royal Museums Greenwich) & Ileana Chinnici (Osservatorio astronomico di Palermo)* p. 49
- 5) Instruments from the Vatican Spectrochemical Laboratory  
*Richard D'Souza (Vatican Observatory)* p. 50
- 6) A Dough Kneader for your Laboratory: Farinograph and Bread-Making Research in Turkey between 1930-1950  
*Barışcan Ersöz (Istanbul University)* p. 51
- 7) L'équatorial photographique de l'Observatoire d'Alger  
*Zaki Cherif Grigahcène, Hamid Sadsaoud & Ahmed Grigahcène (Centre de Recherche en Astronomie, Astrophysique et Géophysique, Algiers)* p. 52
- 8) How pure was Istanbul's air in the eighteenth century? Spallanzani's eudiometric measurements in Istanbul  
*Özge Hazar (Istanbul University)* p. 53
- 9) Alessandro Torlonia's telescope, made by Angelo Lusvergh: Preservation measures before exhibition  
(Part of the organized session Open Challenges in the Conservation of Scientific Instruments)  
*Tiziana Macaluso (Osservatorio Astronomico di Roma)* p. 54
- 10) The “Impossible” Circle  
(Part of the organized session Open Challenges in the Conservation of Scientific Instruments)  
*Filippo Mirabello, Maria Rosalia Carotenuto & Aurelio Agliolo Gallitto (University of Palermo)* p. 55
- 11) Turn of the century massification in Italian education through the lab looking glass: a biography of the physics teaching aids of the MuSEd ISMA fund  
*Rossella Mortellaro (MuSEd, Roma Tre University)* p. 56
- 12) Study and restoration of four chemistry didactic poster from late XIX century  
(Part of the organized session Open Challenges in the Conservation of Scientific Instruments)  
*Angelika Ansaldo Patti, Bartolomeo Megna & Antonella Maggio (University of Palermo)* p. 57
- 13) Hazards in the Science Collections  
*Tacye Phillipson (National Museums Scotland)* p. 58
- 14) Les instruments scientifiques du premier laboratoire universitaire français de psychologie expérimentale  
*Christophe Quaireau & Julie Priser (Université Rennes 2)* p. 59
- 15) Restoration of Giuseppe Pagano's portrait  
(Part of the organized session Open Challenges in the Conservation of Scientific Instruments)  
*Sabrina Sottile, Antonella Tarantino, Megna Bartolomeo, Sabrina Carrozza, Laura Guastella & Elisa Milanese (University of Palermo)* p. 60
- 16) The 3D digital modeling of instruments of the Museo della Specola  
*Salvatore Speziale (Osservatorio astronomico di Palermo)* p. 61

- 17) What do scientific instruments withhold? The preservation of use  
(Part of the organized session Open Challenges in the Conservation of Scientific Instruments)  
*Isabel Tissot & Marta Manso (LIBPhys-UNL, Portugal)* p. 62
- 18) The astronomical instruments of the Abbey of San Martino delle Scale  
*Maria Luisa Tuscano (Independent scholar)* p. 63
- 19) Instruments and Archive from the First Poland Cryogenic Laboratory, c. 1881-1927  
*Ewa Wyka (Jagiellonian University Museum)* p. 64

## **15.30 – 17.30 Parallel sessions (A, B)**

### **Session A - Aula Nunzio Russo**

#### **20TH CENTURY INSTRUMENTS**

Chair: *Juan-Andres Leon (Science Museum, UK)*

- 1) Making Eddington's instruments visible at the solar eclipse station in Principe, 1919  
*Luís Artur Marques Tirapicos, Samuel Gessner & Duarte Pape (University of Lisbon)* p. 66
- 2) The Birth and Development of Magnetron Technology in China (1940-1990)  
*Zhao Ke, Nianci Wang & Hongyin Lv (University of Electronic Science and Technology of China, Chengdu)* p. 67
- 3) Cancer research through the Iron Curtain: Manfred von Ardenne, Felix Wankel and a very expensive "bathtub"  
*Martin Weiss (TECHNOSEUM Mannheim)* p. 68
- 4) Automated Interplanetary Station (AIS) 'Venus-4' Landing Module  
*Gergana Todorivna Ivanova (State Polytechnic Museum, Kyiv)* p. 69
- 5) Glimmer in the Dark: The History of China's First Silicon Target Vidicon  
*Nianci Wang, Zhao Ke & Deli Chen (University of Electronic Science and Technology of China, Chengdu)* p. 70

### **Session B - Aula Magna**

#### **TIME MEASURING THROUGH AGES, CULTURES AND CONTEXTS**

Chair: *Jane Desborough (Science Museum, UK)*

- 1) The landscape as a scientific instrument. Meton's observations from the Pnyx to determine the length of the solar year  
*Efthymios Nicolaidis (National Hellenic Research Foundation)* p. 72

- 2) A Case Study on a 17th-century Ottoman notebook on sundials: the *Risâle-i tersim-i alât-ı hey'et*  
*Gaye Danişan (Istanbul University)* p. 73
- 3) Horse races, falling stars and artillery: Measuring thirds (60th of a second) around 1800 ... or thoughts on the prehistory of Hipp's chronoscope  
*Richard L. Kremer (Dartmouth College)* p. 74
- 4) Catalogue des instruments astronomiques et de mesure du temps en Algérie  
*Ahmed Grigahcène, Hamid Sadsaoud & Zaki Cherif Grigahcène (Centre de Recherche en Astronomie, Astrophysique et Géophysique, Algiers)* p. 75

**Wed, 20 Sept (Faculty of Theology)**

**9.30 – 11.30 Parallel sessions (A, B, C)**

**Session A (9.30 – 11.30) – Aula Nunzio Russo**

**SCIENTIFIC INSTRUMENTATION IN PRE- AND EARLY-MODERN ISLAMICATE SOCIETIES. ASTROLABES AND WHAT ELSE? (1)**

*Organized by Taro Mimura and Petra G. Schmidl* p. 76  
 Chair: *Petra Schmidl (Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany)*

- 1) Rare Instruments in Textual Sources: Theoretical or Materialized  
*Taha Yasin Arslan (Istanbul Medeniyet University)* p. 77
- 2) Conceptualising Alchemical Instruments in Byzantine and Early Islamicate Sources  
*Vincenzo Carlotta (Università di Bologna)* p. 78
- 3) Islamic surgical instruments. Between ideal and reality  
*Fabian Käs (University of Cologne)* p. 79
- 4) Political Role of the Armillary Sphere in the Fatimid Dynasty  
*Taro Mimura (University of Tokyo)* p. 80
- 5) An accessory instrument to the astrolabe, made by a 10th-century craftsman  
*Pouyan Rezvani (Bayerische Akademie der Wissenschaften)* p. 81

## **Session B (9.30 – 11.30) – Aula Maurolico B**

### **COLLECTIONS**

Chair: *Zhao Ke (University of Electronic Science and Technology of China, Chengdu)*

1) A Path between Continuity and Innovation: The Instruments of the Laboratory of Physics at Politecnico di Torino

*Margherita Bongiovanni & Emma Angelini (Politecnico di Torino)* p. 88

2) Huth and Parrot laboratories in Tartu/Dorpat

*Lea Leppik (University of Tartu Museum)* p. 89

3) The birth of the Astronomical and Copernican Museum in Rome

*Francesco Poppi, Marco Faccini & Giangiacomo Gandolfi (INAF - Astronomical Observatory of Rome)* p. 90

## **Session C (9.30 – 11.30) – Aula Magna**

### **INSTRUMENT MAKING AND MAKERS**

Chair: *Gloria Clifton (Royal Museums Greenwich, UK)*

1) Tools of Knowledge: tracking scientific instruments and their makers over time and space

*Rebekah Higgitt, Alex Butterworth, Duncan Hay & Sarah Middle (National Museums Scotland)* p. 92

2) Interpreting silences and overturning assumptions: women in the instrument trade of 18th-century London

*Alexi Baker (Yale Peabody Museum)* p. 93

3) Instruments to think the personal equation

*Loïc Jeanson (University of Lausanne)* p. 94

4) What does "achromatic" mean? Refractions on the construction of early achromatic telescope lenses

*Marvin Bolt (Technische Universität Berlin) & Michael Korey (Staatliche Kunstsammlungen Dresden)* p. 95

5) On a 17th century grinding machine invented in a Capuchin monastery and corresponding very special lenses found in early Dutch telescopes

*Wolfgang Engels (HistEx GmbH)* p. 96

## **12.00 – 14.00      Parallel sessions (A, B)**

### **Session A (12.00 – 14.00) – Aula Nunzio Russo**

#### **SCIENTIFIC INSTRUMENTATION IN PRE- AND EARLY-MODERN ISLAMICATE SOCIETIES. ASTROLABES AND WHAT ELSE? (2)**

*Organized by Taro Mimura and Petra G. Schmidl*

*Chair: Taro Mimura (University of Tokyo, Japan)*

- 1) The Algier workshop of astrolabes and an overview of Maghribi astrolabes  
*Petra G. Schmidl (Friedrich-Alexander-Universität Erlangen-Nürnberg) & Jan P. Hogendijk (Formerly University of Utrecht)* *p. 82*
- 2) The role of Arabic sources in the analysis of ancient timekeeping instruments  
*Anette Schomberg (Charité, Berlin)* *p. 83*
- 3) An English Quadrant in 18th century Morocco: an anonymous Arabic translation of John Hadley's Treatise  
*Justin Stearns (New York University, Abu Dhabi)* *p. 84*
- 4) Timekeeping Practices in Cultural Context: Two Astrolabic Quadrants by Mizzī & Sutton  
*Enes Tepe (Europa Universität Flensburg)* *p. 85*
- 5) Khujandī's 'Comprehensive Instrument'  
*Beyzanur Topçuoğlu (Istanbul Medeniyet University)* *p. 86*

### **Session B (12.00 – 14.00) – Aula Magna**

#### **19TH AND 20TH CENTURY INSTRUMENTS**

*Chair: Martin Weiss (TECHNOSEUM, Mannheim, Germany)*

- 1) The life process of an Amsler integrator  
*Yolanda Muñoz Rey (University of Cádiz)* *p. 98*
- 2) An Early X-Ray Machine in the Ottoman Empire by Esad Feyzi and Osman Rıfat  
*Kevser Rukiye Karabuğa Hatipoğlu (Istanbul Medeniyet University)* *p. 99*
- 3) From the Mines to the Museum: Vilhelm Carlheim-Gyllensköld  
*Karl Grandin (Royal Swedish Academy of Sciences)* *p. 100*

## 15.30 – 17.30 Parallel sessions (A, B)

### Session A (15.30 – 17.30) – Aula Magna

#### VISUAL REPRESENTATIONS: MODELS, DRAWINGS, PHOTOGRAPHY AND PAINTINGS

Chair: *Floor Koeleman (University of Lausanne, Switzerland)*

1) Knowing by drawing: geometric material models, graphical representations, and instruments in 19th century France

*Frédéric Brechenmacher (École polytechnique, Palaiseau)* p. 102

2) On the Representation of Geometric Solids in Different Contexts

*Peggy Aldrich Kidwell (Smithsonian Institution)* p. 103

3) Illustrating the Unknown - Visual representation of demonstration & research in the collections of the Royal Institution of Great Britain

*Charlotte New (Royal Institution)* p. 104

4) Scientific Instruments, Art and Photography: the study of clouds from nineteenth to early twentieth century

*Maria Estela Jardim (University of Lisbon)* p. 105

5) Lauding science through Veloso Salgado's artworks at the University of Porto

*Marisa Monteiro (University of Porto)* p. 106

### Session B (15.30 – 17.30) – Aula Nunzio Russo

#### MID-18TH TO MID- 19TH CENTURY INSTRUMENTS

Chair: *Jip van Besouw (Vrije Universiteit Brussel, Belgium)*

1) Paper or Brass? A budget instrument from the mid 18th century. Johan Törnsten's observations of the transit of Venus, part 2

*Olov Amelin (Jamtli Foundation, Sweden)* p. 108

2) The eudiometer you can use without getting a finger wet

*Jan Tapdrup (Sorø Academy, Denmark)* p. 109

3) Analysing and contextualizing John Robison's experiment on the force-distance-relation in electricity (1769?)

*Peter Heering (Europa Universität Flensburg)* p. 110

- 4) A Mysterious Coulomb Torsion Balance in the collections of the Deutsches Museum  
*Daniel Liu (Ludwig Maximilian University Munich), Jesse Garrison (University College London), Julien Gressot (University of Neuchâtel) & Elisabetta Rossi (University of Milan)* p. 111
- 5) Nomadic geochemistry in mid-19th century Ottoman Empire: John Lawrence Smith's moving laboratory  
*Gönenç Göçmengil (Istanbul University) & Fatma Gülmez Yıldırım (Istanbul Technical University)* p. 112

**Thu, 21 Sept (Faculty of Theology)**

**9.30 – 11.30 Parallel sessions (A, B, C)**

**Session A (9.30 – 11.30) – Aula Maurolico B**

**OPEN CHALLENGES IN THE CONSERVATION OF SCIENTIFIC INSTRUMENTS (1)**

*Organized by Maria Rosalia Carotenuto, Anna Giatti, Giuseppe Lazzara and Emma Angelini* p. 113

Chair: *Emma Angelini (Politecnico di Torino, Italy)*

- 1) Assessing the conservation status in scientific instrument collections: strategies and tools  
*Anna Giatti (Fondazione Scienza e Tecnica, Florence)* p. 114
- 2) Conservation practices on working instruments. A case study from the Museo Nazionale Scienza e Tecnologia Leonardo da Vinci  
*Marianna Cappellina & Luca Reduzzi (Museo Nazionale Scienza e Tecnologia Leonardo da Vinci)* p. 115
- 3) Master thesis: Study and chosen restoration of ten electrostatic machines from the Rijksmuseum Boerhaave in Leiden  
*Mathilde Sneiders (Atelier conservation-restauration Sàrl)* p. 116
- 4) “A WARNING FROM MARS”. Climate risk assessment in the Museo della Specola, Palermo  
*Maria Rosalia Carotenuto, Giuseppe Lazzara, Giuseppe Cavallaro & Bartolomeo Megna (University of Palermo), Dario Camuffo & Antonio della Valle (CNR-ISAC, Padova) & Fernanda Prestileo (CNR-ISAC, Roma)* p. 117
- 5) Preserving Palermo University's scientific legacy  
*Marco Di Bella (University of Palermo)* p. 119

## **Session B (9.30 – 11.30) – Aula Nunzio Russo**

### **PERSPECTIVES OF ENGAGING WITH INSTRUMENTS (1)**

Chair: *Charlotte New (Royal Institution, UK)*

1) Things that Talk: On a new perspective for engaging with scientific instruments

*Ion Mihailescu & Jérôme Baudry (EPFL, Lausanne)* p. 126

2) Recollecting collections: using oral histories to create social, sensorial, and emotional histories of school science equipment

*Rosanna Evans (University of Leeds & Science Museum, London)* p. 127

3) The Art of Experiences: from the material culture of Nolletian physics to the didactics of Fisicademos (1738-2022)

*Aitor Rodríguez Moreno (Alicante University)* p. 128

4) 3D Collection – Making the hidden accessible

*Roberta Flora Spano (ETH Zurich)* p. 129

5) Science through the keyhole: revealing scientific practices through workspaces

*Jane Desborough (Science Museum, London)* p. 130

## **Session C (9.30 – 11.30) – Aula Magna**

### **19TH CENTURY INSTRUMENTS**

Chair: *Jan Tapdrup (Sorø Academy, Denmark)*

1) Les instruments du cabinet de physique du Lycée Saint-Joseph d'Istanbul

*Feza Günergün (Istanbul University)* p. 136

2) A Harmonium with the Mathematically Precise Scale at the Royal Institute of Physics in Rome

*Miriam Focaccia (Museo Storico della Fisica e Centro Studi e Ricerche 'Enrico Fermi') & Giovanni Organtini (Sapienza Università di Roma)* p. 137

3) The Astronomical Spectroscope as a Field Instrument

*Thomas Hockey (University of Northern Iowa)* p. 138

4) Crossing contexts: locomotive vibration recorders and seismology in the late 1800s

*Alexandra Rose (Science Museum, London)* p. 139

5) Santini, the Meridian Circle and the Paduan Catalogues. The improvement of the modern astrometric data with the use of XIX century stellar catalogues

*Federico Di Giacomo, Simone Zaggia & Valeria Zanini (Astronomical Observatory of Padova)* p. 140



## **12.00 – 14.00      Parallel sessions (A, B, C)**

### **Session A (12.00 – 14.00) – Aula Maurolico B**

#### **OPEN CHALLENGES IN THE CONSERVATION OF SCIENTIFIC INSTRUMENTS (2)**

*Organized by Maria Rosalia Carotenuto, Anna Giatti, Giuseppe Lazzara and Emma Angelini*

*Chair: Maria Rosalia Carotenuto (University of Palermo, Italy)*

1) In situ physicochemical investigations for knowledge and conservation of scientific instruments: case studies

*Leila Es Sebar (Politecnico di Torino) p. 120*

2) The lacquering and relacquering of scientific instruments: an interdisciplinary approach to the characterization of layered coatings

*Miriam Truffa Giachet, Julie Schröter & Laura Brambilla (Haute Ecole Arc Conservation Restoration) p. 121*

3) Preserving the Past, Navigating the Future: Conservation of 19th Century Terrestrial Globe

*Michael Maggen (Former Head of Paper Conservation, Israel Museum) p. 122*

4) An open issue: remove or maintain the alteration layer on the scientific instruments

*Panayota Vassiliou (National Technical University Athens) p. 123*

5) Low temperature plasma for protective coatings deposition on metallic cultural heritage assets

*Emma Angelini (Politecnico di Torino) p. 124*

### **Session B (12.00 – 14.00) – Aula Nunzio Russo**

#### **PERSPECTIVES OF ENGAGING WITH INSTRUMENTS (2)**

*Chair: Stéphane Fischer (Musée d'histoire des sciences de Genève, Switzerland)*

1) What can 16th century artillery instruments tell us as pieces of decorative art?

*Olga Neuymina (Independent scholar, St. Petersburg) p. 131*

2) Scientific or scientific instruments – instruments in technical academia

*Laila Zwisler (Technical University of Denmark) p. 132*

3) Reflections from Stephen Hawking's office on the mundane, the ephemeral, and the 'authentic'

*Juan-Andres Leon (Science Museum, London) p. 133*

4) The instruments of French Big Science photographed, drawn and ... preserved?  
*Jean Davoineau (French Ministry of Culture)* p. 134

### **Session C (12.00 – 14.00) – Aula Magna**

#### **LATE MEDIEVAL TO EARLY MODERN INSTRUMENTS**

Chair: *Taha Yasin Arslan (Istanbul Medeniyet University, Türkiye)*

1) The concept of globes as instruments in the age of al-Idrisi  
*Harald Gropp (Heidelberg)* p. 142

2) A clever but short-lived instrument type from fifteenth-century Erfurt: the *Theorice Novelle*  
*Samuel Gessner (University of Lisbon)* p. 143

3) Sands of Time: A 16th-Century Treatise on Hourglass  
*Afra Akyol (Istanbul Medeniyet University)* p. 144

### **15.30 – 17.30 Parallel sessions (A, B)**

#### **Session A (15.30 – 17.30) – Aula Nunzio Russo**

#### **SCIENTIFIC INSTRUMENTS IN TEXTS AND ARCHIVAL SOURCES**

Chair: *Sumner Braund (History of Science Museum, Oxford, UK)*

1) Extraction of Arrows in Graeco-Roman Antiquity: Instruments and Methods in Texts  
*Hatice Şeyma Selbesoğlu, Tuncay Zorlu & Aytekin Çökelez (Istanbul Technical University)* p. 146

2) Scientific Instruments in the Travelogue of Ulrich Jasper Seetzen  
*Meltem Kocaman & Barışcan Ersöz (Istanbul University)* p. 147

3) Recent rediscovery of the original manuscript of Cavendish's paper: "To determine the Density of the Earth" (1798)  
*Pierre Lauginie (University Paris-Saclay)* p. 148

4) Scientific Instruments in Alexander von Humboldt's Correspondence and Journals of his Expedition to Russia, Siberia and Central Asia in 1829  
*Florian Schnee (Berlin-Brandenburg Academy of Sciences and Humanities)* p. 150

5) From inside the archive: modeling the history of the reaction key  
*Alina Volynskaya (EPFL, Lausanne)* p. 151

## Session B (15.30 – 17.30) – Aula Magna

### RECONSTRUCTIONS AND REPLICATIONS

Chair: *Laila Zwisler (Technical University of Denmark)*

- 1) Rediscovering Optics in Ottomans: Taqī al-Dīn’s Experiments Replicated  
*Sena Aydın (Istanbul Medeniyet University)* p. 153
- 2) Re-assessing a historic microscope collection through the re-enactment of observations  
*Tiemen Cocquyt (Rijksmuseum Boerhaave)* p. 154
- 3) A 19th century icon at the King’s College London: reconstruction and learning from Wheatstone’s stereoscopic demonstration apparatus  
*Andreas Junk (Europa Universität Flensburg)* p. 155
- 4) Reconstructing Scientific Discovery – A Case Study of Faraday’s Electric Motor  
*David S. Ricketts (Harvard University)* p. 156
- 5) Bringing history to Modern Science Engagement through scientific instruments  
*Michael Cutts & Charlotte New (Royal Institution) & David Ricketts (Harvard University)* p. 157

**Fri, 22 Sept (Physics Dept)**

**9.30 – 11.30 Parallel sessions (A, B)**

## Session A (9.30 – 11.30) – Aula B

### WITHIN THE MARKET: ON THE IDENTITY OF DEALERS IN SCIENTIFIC INSTRUMENTS AND THE NATURE OF THEIR COMMODITIES

*Organized by Rossella Baldi, Martina Schiavon and Céline Fellag Ariouet p. 158*

Chair: *Janet Laidla (University of Tartu, Estonia)*

- 1) Vendre la précision horlogère à la fin du 18e siècle: les agents de Josiah Emery  
*Rossella Baldi (Université de Neuchâtel)* p. 159
- 2) Making Surgical Instruments and Crafting Reputation: The Dynamics of Camillus Nyrop’s Work in Danish Medicine  
*Kristin Halverson (KTH Royal Institute of Technology)* p. 160
- 3) The Hartmann comparator: a go-between artillery & sciences instrument  
*Martina Schiavon & Céline Fellag Ariouet (Université de Lorraine)* p. 161

4) Dealing the ‘Islamic world’ to Europeans: Strategy and identity at the turn of the 20th century  
*Sumner Braund (History of Science Museum, Oxford)* p. 162

5) The Art Market and Discovery in Mathematical Instruments  
*Anthony Turner (Independent scholar)* p. 163

### **Session B (9.30 – 11.30) – Aula A**

#### **EARLY MODERN INSTRUMENTS**

Chair: *Michael Korey (Staatliche Kunstsammlungen Dresden, Germany)*

1) The Jagiellonian Globe as an early mechanical armillary sphere, a history, provenance, and a technical review  
*Małgorzata Taborska (Jagiellonian University Museum)* p. 165

2) The Sixteenth-Century Primum Mobile: Instrument, Concept, Data  
*Floor Koeleman (University of Lausanne)* p. 166

3) Some Assembly Required: Instrument Volvelles and Interaction in Giovanni Paolo Gallucci’s *Theatrum mundi et temporis* (1588)  
*Stephen Johnston (History of Science Museum, Oxford)* p. 167

4) The Mathematical-Physical Cabinet and the Collections of the Early Modern Cologne Jesuits as a University Collection of European Rank?  
*Henrike Stein (University of Cologne)* p. 168

5) Force, lifting machines, and the perpetuum mobile from Descartes to Smeaton  
*Jip van Besouw (Vrije Universiteit Brussel)* p. 169

### **12.00 – 14.00 Parallel sessions (A, B)**

#### **Session A (12.00 – 14.00) – Aula A**

#### **OBSERVATORIES**

Chair: *Louise Devoy (Royal Museums Greenwich, UK)*

1) De l’observatoire astronomique au Laboratoire Temps-Fréquence. Étude, inventaire et patrimonialisation des instruments scientifiques de l’Observatoire de Neuchâtel  
*Julien Gressot & Gaetano Mileti (Université de Neuchâtel)* p. 171

- 2) Les quatre instruments principaux de l'Observatoire d'Alger  
*Hamid Sadsaoud, Ahmed Grigahcène & Zaki Cherif Grigahcène (Centre de Recherche en Astronomie, Astrophysique et Géophysique, Algiers)* p. 172
- 3) The old is reborn: An interwar observatory and astrograph at the crossroads of history  
*Monika Ramonaite, Julija Jonusaite & Agne Poskiene (Vilnius University Museum)* p. 173
- 4) Instrumental architecture: Lost and found in the Observatory of Oslo  
*Anne Vaalund & Bjørn V. Johansen (University of Oslo)* p. 174
- 5) The Heart of the Observatory: The Stockholm Observatory's 3,5-foot Bird Transit Instrument  
*Johan Kärnfelt (University of Gothenburg)* p. 175

### **Session B (12.00 – 14.00) – Aula B**

#### **BIOGRAPHIES**

Chair: *Kristin Halverson (KTH Royal Institute of Technology, Sweden)*

- 1) Charles Fievez, pioneer spectroscopist in Brussels  
*Ricardo Manuel Pires Barbosa (Royal Observatory of Belgium)* p. 177
- 2) The surveying instruments and surveying methods by Friedrich Simony  
*Petra Svatek (Austrian Academy of Sciences)* p. 178
- 3) Maria Cunitia as a User of Astronomical Instruments and Inspiration to Johannes Hevelius  
*Jarosław Włodarczyk (Institute for the History of Science, Polish Academy of Sciences)* p. 179
- 4) Edward Hutchinson Syngge- Hutchie- The inventor of the near-field optical microscope  
*Denis Weaire & John Donegan (Trinity College Dublin)* p. 180
- 5) Curious tides on the Lake of Geneva  
*Stéphane Fischer (Musée d'histoire des sciences de Genève)* p. 181

**15.30 – 17.30 ANNUAL GENERAL MEETING OF THE SIC AND FAREWELL**  
**(plenary) – Aula A**

## **Educational activities with the mathematical machines at school and at the University Museum**

Michela Maschietto

*Dept of Education and Human Sciences, University of Modena e Reggio Emilia, Italy*

This contribution concerns the activities carried out in mathematics education and popularization of mathematics with mathematical machines by the Laboratory of mathematical machines ([www.mmlab.unimore.it](http://www.mmlab.unimore.it)). Mathematical machines are mechanical tools for geometry drawn from historical treatises and related to the history of mathematics (a mathematical machine is “a tool that forces a point to follow a trajectory or to be transformed according to a given law”); they are a collection of the Museum System and Botanical Garden of the University of Modena e Reggio Emilia.

The activities mainly focus on the use of machines as mediators of mathematical meanings within the mathematics laboratory methodology. They concern teacher education and the implementation of mathematics laboratory sessions with pupils at different school levels. The latter take place not only at school, but also in the museum spaces. At school, educational activities are the results of collaborative work between teachers and researchers and are structured in several sessions for the same class; while at museum, a single laboratory session is carried out, according to the following structure: after a brief introduction on the topic (conic sections or geometrical transformations) chosen by the teacher, the students first work in small groups on different mathematical machines with the support of worksheets (the completed worksheets can be collected by the teacher for later work in classroom), then they present to the whole class what they have discovered on their machine. At the end, the students visit the exhibition “Machines, mechanics and mathematics” (<https://www.macchinematematiche.org/macchine-meccanica-e-matematica.html>, in Italian).

**Michela Maschietto**, PhD, Associate professor in mathematics education. Her research works concern the mediation of artefacts (material and digital ones) in the construction of mathematical meanings and teacher education. She organizes all the activities with the mathematical machines, at school and in the museum.

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