

Valentina Roberti

## CURRICULUM VITAE

### PERSONAL DETAILS

Family name, First name: Roberti, Valentina

Address: Via Nosadella, 3 – 40123 Bologna (Italy)

Phone: +39 3338307842

E-mail: [valentina.roberti@unipd.it](mailto:valentina.roberti@unipd.it)

Place and date of birth: Bologna (Italy), 12-06-1989

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### EDUCATION

- 01/10/2015-12/12/2018: **Ph.D. in Physics**, Department of Physics and Astronomy, University of Padova, Italy. Thesis title: “Maxwell and Helmholtz and the birth of the theory of colour”  
PhD supervisor: Prof Giulio Peruzzi
- 28/03/2014: **Master’s degree (Laurea magistrale) in Physics** (110/110 *cum laude*), University of Bologna, Italy. Thesis title: “Investigation of dangling bonds in Al<sub>2</sub>O<sub>3</sub> passivated Si surface using Electron Paramagnetic Resonance (EPR)”  
Supervisor: Prof Anna Cavallini, Dr. Saskia Kühnhold
- 09/12/2011: **Bachelor’s degree (Laurea triennale) in Physics** (109/110), University of Bologna, Italy. Thesis title: “Study of deep-level and shallow-level defects in CdTe detectors using PICTS (Photoinduced current transient spectroscopy)”  
Supervisor: Prof Anna Cavallini
- 01/02/2011-01/05/2011: **Teaching internship** at the secondary school Liceo Ginnasio “Luigi Galvani”, Bologna, Italy. Topic: History of physics in the 16<sup>th</sup> and 17<sup>th</sup> centuries, with a particular focus on Galileo Galilei
- 09/07/2008: **High school degree** (100/100), Liceo Ginnasio “Luigi Galvani”, Bologna (international high school, German section), Italy

### CURRENT POSITION

- 01/02/2024 to date: **research scholar** at the Deutsches Museum, Munich, Germany

### PREVIOUS POSITIONS

- 01/06/2023-01/03/2024: Temporary position as an **author of history of science contents** for high school textbooks at Zanichelli Publishing House, Bologna, Italy

- 01/05/2021-01/05/2023: **Postdoctoral fellow** in the History of Physics at the Department of Physics and Astronomy, University of Padova, Italy.  
Fellowship title: "Interpreting light and colour: from physics to psychophysics and geometry"
- 31/01/2019-30/04/2021: **Postdoctoral fellow** in History of Physics at the Department of Physics and Astronomy, University of Padova, Italy.  
Fellowship title: "History of Science and Technology at the University of Padua from its foundation to the present day"
- 01/10/2015 to date: **Museum educator** at the "Giovanni Poleni Museum. A History of Physics Between Padua and the World", University of Padova, Italy
- 01/03/2014-01/10/2015: **Teacher** (physics/mathematics/German) at the Education Centres "L'angolo del sapere", Bologna, and "L'Isola della conoscenza", Bologna, Italy
- 01/12/2012-31/07/2013: **Master's degree research** at "Fraunhofer ISE" (Institut für Solare Energiesysteme ISE) in Freiburg im Breisgau, Germany

## RESEARCH PROFILE

My research focuses on the history of science, particularly the history of physics and the history of colour theory from the 18<sup>th</sup> to the 20<sup>th</sup> century.

From 2019 to 2021, I work as a Postdoctoral Fellow on a project dedicated to tracing the history of science and technology at the University of Padova, spanning from its foundation in 1222 to the mid-20th century. During this time, my research delved into the early modern period, concentrating on the emergence and progression of scientific and technological disciplines and their integration into the academic curriculum at the University of Padova.

As a Postdoctoral Fellow from 2021 to 2023, I work on the project entitled "Interpreting light and colour" aimed at investigating the legacy of Maxwell and Helmholtz in the field of colour science and colour vision. In 2021, I led a research project intending to replicate the original version of Maxwell's colour box - a tool enabling the direct comparison of white light with a mixture of spectral colours. This initiative, conducted in collaboration with Prof Giulio Peruzzi and the NanoStructures Group (NSG) at the Department of Physics and Astronomy of the University of Padova, aligned with the principles of the Experimental History of Science. Currently, my research endeavours revolve around the analysis and re-enactment of original scientific artifacts to gain fresh insights into the development of scientific knowledge.

## TEACHING ACTIVITY

2023-2024: Physics Laboratory II, University of Padova, Italy (40 hours): Laboratory course covering electromagnetism and optics for second-year BSc Engineering students.

## PUBLICATIONS

- Roberti, V. 2024. "Helmholtz, Schrödinger, and the First Non-Euclidean Model of Perceptual Color Space." In «Annalen der Physik» 2300536. <https://doi.org/10.1002/andp.202300536>
- Roberti, V., Peruzzi, G. 2023. "The Helmholtz legacy in color metrics: Schrödinger's color theory". In «ARCHIVE FOR HISTORY OF EXACT SCIENCES». <https://doi.org/10.1007/s00407-023-00317-x>

- Peruzzi, G., Roberti, V. 2023. "Helmholtz and the geometry of color space: gestation and development of Helmholtz's line element". In «ARCHIVE FOR HISTORY OF EXACT SCIENCES». <https://doi.org/10.1007/s00407-023-00304-2>
- Roberti, V., Kalinic, B., Cesca, T., Bacci, L., Peruzzi, G. 2022. "Maxwell's color box: Retracing the path of color matching experiments". In «AMERICAN JOURNAL OF PHYSICS», vol. 90 (10). <https://doi.org/10.1119/5.0087786>
- Peruzzi G., Roberti V. 2022. "Scienza e tecnica. Dalla rivoluzione scientifica alla rivoluzione digitale" - ISBN: 978-88-5522-387-4. In PATAVINA LIBERTAS. UNA STORIA EUROPEA DELL'UNIVERSITÀ DI PADOVA. <https://www.donzelli.it/libro/9788855223669>
- Peruzzi G., Roberti V. 2019. "The colour top and the distinction between additive and subtractive colour mixing". In «IEEE ANTENNAS & PROPAGATION MAGAZINE» - ISSN:1045-9243 vol. 61 (5), pp. 138-145. DOI:10.1109/MAP.2019.2932304
- Peruzzi G., Roberti V. 2019. "Exposing Colour: Newton's Theory through Maxwell's Lens". In «Proceedings of the 1st European Regional IHPST Conference» - ISBN:978-3-939858-39-3 vol. 4, pp. 11-26.

## OUTREACH ACTIVITIES

- 19/01/2023: Writing of the seven episodes of **"The Mathematics of Color: the beginning"** for the scientific dissemination website **"MaddMath!"**, in collaboration with Edoardo Provenzi, Professor at the Université de Bordeaux, France.
- 18/01/2023: **Presentation of the book** "Science and technology. From the scientific revolution to the digital revolution", Palazzo del Bo, Padova, Italy
- 5/05/2022-10/05/2022: Outreach activity on Galileo Galilei, **"Pillole Galileiane"**, for the project "Champions di libertà tra cultura e prossimità", an interactive and informative tour, Padova, Italy
- 28/06/2021: Oral contribution "L'interpretazione della luce e del colore dall'Antichità a oggi" for the initiatives of the **"Piano Lauree Scientifiche"** (PLS) in physics for high school students, Department of Physics and Astronomy, University of Padova, Italy
- 7/05/2021: Seminar "Luce e colore" promoted by the cultural association **"Progetto Formazione Continua"**, Padova, which organizes cultural activity for people of all ages, with particular regard to elderly people promoting interaction among the generations
- 01/10/2015 to date: Collaboration with the Curator Sofia Talas (University of Padova) of the **Museum of the History of Physics "Giovanni Poleni"** for the realization of **events, workshops, exhibitions, and projects** related to the history of physics and the history of scientific instruments for students, scholars, and community. From October 2022 to May 2023, I collaborated on the project "Science from the Islamic World to Today's Europe", with a focus on presenting various aspects of science development from Islamic contributions to cutting-edge physics and astronomy. Since 2025, I also organized events in collaboration with the Cesare Pollini Conservatory of Music in Padova, exploring the relationship between physics and music. Additionally, I conducted guided tours at the Museum for Researchers' Night (Veneto Night). In July 2017, I co-supervised the "Unveiling Scientific Instruments" project, aiming to introduce high school students to museum collections and scientific instruments.

## ORAL PRESENTATIONS TO CONFERENCES

- Upcoming - 18 April 2024: **invited speaker** at the Institut für Physik und ihre Didaktik und Geschichte, Flensburg, Germany. I will carry out a workshop focused on the history of colour science and the history of scientific instruments related to colour vision studies for PhD students working within the group led by Prof Peter Heering
- 26-27 February 2024: XX. Symposium of the Division for History of Physics at the Spring Meeting of the German Physical Society (DPG), Greifswald, Germany. **Presentation title:** "Interplay of physics and chemistry at the University of Padua in the 18th century: a case of cross-fertilization among scientific disciplines"
- 31 August-3 September 2023: Early-Career Conference for Historians of the Physical Sciences 2023 AIP, Niels Bohr Institute, Copenhagen, Denmark. **Presentation title:** "Schrödinger's Research on Color"
- 18 April 2023: **Invited speaker** at the Conference "Universa Universis Patavina Libertas, 800 years of culture at the University of Padova as narrated by its Bay Area Alumni", Italian Cultural Institute, San Francisco, California. **Presentation title:** "From the scientific to the digital revolution"
- 30 March-1 April 2023: British Society for the History of Science Postgraduate Conference 2023, Oxford, England. **Presentation title:** "Helmholtz's legacy: an account of Schrödinger's colour theory"
- 22-25 May 2018: Biographies in the History of Physics: Actors, Objects, and Institutions. Physics Center, Bad Honnef, Germany. **Presentation title:** "The colour top and the distinction between additive and subtractive colour mixing"
- 11-15 September 2017: 103° Congresso Nazionale della Società Italiana di Fisica (SIF), Trento, Italy. **Presentation titles:** Marcon, F., Roberti, V., "Svelare gli strumenti scientifici: Dal museo al grande pubblico - Esperienza di stage al Museo di Storia della Fisica dell'Università di Padova"; Roberti, V. "Lo spazio del colore tra geometria e fisica della percezione"
- 26-30 September 2016: 102° Congresso Nazionale della Società Italiana di Fisica (SIF), Padova, Italy
- 22-25 August 2016: 1st European Regional IHPST Conference, Science as Culture in the European Context. Europa-Universität Flensburg, Germany. **Presentation title:** "Newton's Theory through Maxwell's Lens"

## MEMBERSHIP IN SCIENTIFIC SOCIETIES

- The British Society for the History of Science: BSHS
- Deutsche Physikalische Gesellschaft: DPG

## LANGUAGE SKILLS

Italian (Native)

English (Reading: Fluent; Writing: Fluent; Listening: Fluent; Verbal: Fluent)

German (Reading: Fluent; Writing: Fluent; Listening: Fluent; Verbal: Advanced)

- June 2005: Preliminary English Test (Pass with Merit)

- December 2006: First Certificate in English (Grade B)
- November 2008: Deutsches Sprachdiplom der Kultusministerkonferenz (C1)

#### TECHNICAL SKILLS

- Excellent knowledge of iOs environments
- Excellent knowledge of Microsoft Office programs (Word, Excel, Power Point)
- Excellent knowledge of OriginLab

12/03/2024