

Symposium Hidden Variables: Contributions of Women to Quantum Physics (SYWQ)

jointly organised by
the Quantum Optics and Photonics Division (Q),
the Quantum Information Division (QI), and
the Working Group on Equal Opportunities (AKC)

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As in almost all areas of physics, women are underrepresented in quantum physics. To make things worse, in history, scientific contributions by women are often hidden. Also in current research, women are faced with obstacles that impede visibility of their work. This symposium will take a look at both our view of the history of women's contributions to quantum physics, as well as the current situation where women are too often faced with a seriously uncomfortable environment. The assessment prompts us to rethink models of scientific community and leadership and explore new avenues for defining academic authority.

Overview of Invited Talks and Sessions

(Lecture hall HS 1+2)

Invited Talks

SYWQ 1.1	Thu	11:00–11:30	HS 1+2	Reshaping the History of Quantum Physics: Paths to Gender Equality — ●ANDREA REICHENBERGER
SYWQ 1.2	Thu	11:30–12:00	HS 1+2	Lucy Mensing: Forgotten Pioneer of Quantum Mechanics — ●GERNOT MÜNSTER
SYWQ 1.3	Thu	12:00–12:30	HS 1+2	Roller-coasting women scientific trajectories: New frontiers to accelerate (quantum) science — ●MARILÙ CHIOFALO
SYWQ 1.4	Thu	12:30–13:00	HS 1+2	Who decides scientific authority and how? — ●ANNA SANPERA

Sessions

SYWQ 1.1–1.4	Thu	11:00–13:00	HS 1+2	Hidden Variables: Contributions of Women to Quantum Physics
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SYWQ 1: Hidden Variables: Contributions of Women to Quantum Physics

Time: Thursday 11:00–13:00

Location: HS 1+2

Invited Talk SYWQ 1.1 Thu 11:00 HS 1+2
Reshaping the History of Quantum Physics: Paths to Gender Equality — ●ANDREA REICHENBERGER — TU Munich, Germany

We are all familiar with gender dynamics, biases, and stereotypes on the online platforms we visit, use, and co-create every day. They are ubiquitous in large language models (LLMs) and other generative AI technologies trained on large amounts of data. Their spillover effects are now well studied in scientific research. There is comparatively little research on how the history of physics is represented and practiced in today's online spaces. This talk will take you on a journey through the history of quantum physics, exploring new avenues for a gender-sensitive future of the history of physics. And it offers a critical insight into how expertise in the history of physics, science communication and public opinion influence and reinforce each other in the practice of digital history. Drawing on a series of case studies on women in the history of quantum physics, we examine the Matilda effect on online platforms and offer perspectives on how to successfully counteract this effect, which gives a name to the systematic misrecognition of women's contributions to science and technology.

Invited Talk SYWQ 1.2 Thu 11:30 HS 1+2
Lucy Mensing: Forgotten Pioneer of Quantum Mechanics — ●GERNOT MÜNSTER — Universität Münster

In 1925 a young postdoc, Lucy Mensing, came to Göttingen to do research with the new matrix mechanics, which had just been formulated. In the following years she did groundbreaking work. She successfully made the first application of the new theory to diatomic molecules. As a by-product of this work, she was the first who found that, even though in general both integer and half-integer values are allowed for angular momentum, orbital angular momentum always takes on integer values. Pauli, being impressed by her clear and masterful treatment of the problem, invited her to work with him on the polarizability of gases. After that, she worked in Tübingen. In my contribution I will sketch the pioneering work of Mensing and give a brief account of her life. I will also discuss why she gave up her career, which ended in 1930 after she married and started a family.

Invited Talk SYWQ 1.3 Thu 12:00 HS 1+2
Roller-coasting women scientific trajectories: New frontiers to accelerate (quantum) science — ●MARILÙ CHIOFALO — Physics

Department, University of Pisa, Italy, W4Q, Labodif School

Science is objective in the results that are obtained within the perimeter of scientific thinking and related methods. In an oxymoron, science is also subjective in the trajectories of the scientists who obtain those results, everyone in their way.

While subjectivity is important for everyone, for women scientists it seems to hardly find a visible, comfortable, truly-free space where to be authentically represented: consequences are the leaky pipeline where many careers disappear, and the unconventional curves often characterizing scientific trajectories. Shared by any other working or social context, this is a preeminent condition in scientific and highly technological environments. In fact, in the last 30 years the limited number of women in science has been recognized and addressed as a crucial problem, to be overturned via equity-diversity-inclusion policies, though with incremental results.

In this talk, I will elaborate on questions that emerge from these reflections. Why progress has so far been incremental? Which effective actions for a concrete transformation? Which impact for everyone?

I will explore these questions by resorting to gender-studies frameworks and by roller-coasting illuminating non-conventional, curved, trajectories of quantum women scientists. Valuing subjective trajectories and objective results, can this make science environments comfortable for women and accelerate (quantum) science?

Invited Talk SYWQ 1.4 Thu 12:30 HS 1+2
Who decides scientific authority and how? — ●ANNA SANPERA — Universitat Autònoma de Barcelona, Spain

In 2023, an international group of female professors of quantum physics gathered together to discuss at length their scientific research interests but also to share experiences and thoughts related to the persistent gender gap in science and the failure of present efforts made to close the gap. This initiative led to a self-organized entity entitled Women for Quantum (W4Q), whose primary interests are to debate/question the present model of scientific career as well as to propose new directions. In 2024, after one year of work, W4Q went public, publishing a review article entitled *W4Q: A manifesto of values*. In this talk, as a representative member, I would like to present W4Q, and question a crucial topic which is rooted in any gender gap issue: how and by whom scientific authority is decided.