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Women for quantum – manifesto of values

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Data show that the presence of women in quantum science is affected by a number of detriments and their percentage decreases even further for higher positions. Beyond data, from our shared personal experiences as female tenured quantum physics professors, we believe that the current model of scientific leadership, funding, and authority fails to represent many of us. Women for quantum calls for a joint effort and aims with this initiative to contribute to such a transformation. It is time for a real change that calls for a different kind of force and for the participation of everyone.

Who are we

Women for Quantum (W4Q) is a group of female physics professors currently mostly based in Europe but also in Japan, working in the field of AMO physics (quantum optics, atomic and molecular), quantum many-body physics, and quantum information. All of us hold tenured positions and have more than 10 years of professional experience post-PhD. We have observed numerous initiatives aimed at improving gender balance in our field and making our professional environment more welcoming to diversity. However, we find that most of these initiatives are ineffective in achieving these goals. Several facts, for the EU28 countries, confirm our observations as seen in refs. 1–6:

- In the broader field of Natural Sciences, including biology, women account for less than 22% of full professors or equivalent research positions (6 % in Japan) despite comprising more than 50% at the university entry level.
- In physics, the situation is even direr. Available data show that, for example, in 2021 Germany had 12% full professors in physics, while the UK had the same percentage in 2019, and Spain had 14% in 2020.
- The phenomenon of women abandoning a research career, thus widening the gender gap at every career stage (the “leaky pipeline”), is widespread.
- Participation in research funding remains very low for women.
- Women generally shoulder an excessive burden of community service (committees, evaluations, etc.) compared to their male colleagues.

- The gender pay gap in academia remains high in many countries.

These facts, combined with our shared personal experiences of uncomfortable environments for women⁷, have prompted us to reconsider the current state of research practices: Who defines academic authority and how is it done? What is the present model of scientific leadership in general, and in our community in particular? How is funding of research organized? And why are research careers excessively competitive to the extent of often hindering scientific progress?

We firmly believe that the current model of scientific leadership, funding, and authority fails to represent many of us. We are convinced that it is also detrimental to our colleagues, women, men, and non-binary persons.

It is time for a real change that calls for the participation of everyone. We aim with this initiative to be a seed for such a change.

Manifesto of values

This Manifesto outlines the values and goals we identify with. By sharing these values, we aim to initiate a dialogue and trigger new paths of doing research, thereby advancing the community as a whole. We trust that these values resonate with other members of our community, particularly those from underrepresented groups.

Values and goals.

- We value acting as a community, enriched by a genuine culture of sharing and collaboration.
- We value trust, honesty and integrity.
- We value critical, curiosity-driven, and creative thinking.
- We value diversity, and believe in empowering others.
- We value the freedom to express opinions or ask questions without fear of judgment.
- We value respect and kindness in discussions and communication, regardless of hierarchy or role, in lieu of aggressive attitude.
- We value respectful language and imagery in communicating scientific results or lecturing.
- We value using words and images that have the power to transform reality, creating an inclusive and non-discriminatory, e.g. non-gender-biased, scientific community.
- We value the respect for the space of the body and the comfort of each person.

Building on these values, we aim at

- Taking an active role in transforming the way quantum science is done and valued, both for ourselves and for future generations of (quantum) scientists;

- Creating an open and welcoming space for female scientists;
- Building a participatory, inclusive and supportive scientific community, where teamwork is fostered: a community built on the concept of authority originating from the Latin ‘augere’, i. e., focused on ‘nurturing’ and ‘growing’;
- Bringing women to the forefront, which also entails redistributing power. Power is the ability to make changes, create new possibilities and participate in decision making. Power requires access to the right resources, including finances and connections. Currently, female scientists are under-represented in decision-making bodies and de-facto prevented from exerting considerable influence on decision-making processes - relegating them to the position of being the ‘female in the room’ instead of being recognized as scientists. We advocate for power and decision-making to be shared rather than concentrated. We advocate for decision making to be integrated across the entire organizational structure and in particular at high levels, prioritizing transparency and focusing on the benefit of the entire scientific community.
- Counteracting gender-bias in the scientific community. Gender-bias, including unconscious, is a well-documented phenomenon that affects the recognition and access of female scientists to financial resources, promotions, publication in high impact journals, among other areas. Our goal is to raise awareness on this phenomenon, and to enforce effective measures to address it in its various, even subtle, forms.
- Freeing our community from microaggressions, harassment, and any other degrading behaviors and practices that result in making women invisible or even just uncomfortable. Reports (see ref.¹) consistently show that women are more exposed to such discrimination and practices than the average. Additionally, too many of us have personal stories or know colleagues who have experienced serious misconduct, damaging women’s careers. This misconduct ranges from belittling, to sexist comments to actual harassment. We seek to raise awareness across the whole scientific community about the current situation and strive to put an end to it.
- Fostering, empowering, and implementing a different approach to evaluating quality in science. We believe it is crucial to assess not only the scientific output but also the process and journey leading to it. Therefore, we advocate for measures that go beyond relying solely on numerical metrics like the h-index or citation counts, also acknowledging the existence of diverse career paths. In recruitment and funding processes, we advocate for assessing capabilities in teamwork and valuing one’s ability to create a healthy scientific ecosystem, in addition to technical and managerial abilities.

We aim at achieving a true change. The first step is to acknowledge the unsatisfactory current situation of women in quantum physics. Existing measures have not enough impact. The change we seek will benefit all under-represented communities as well as the quantum ecosystem as a whole.

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Author contributions

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Competing interests

The authors declare no competing interests.

Additional information

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