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What makes me tick? Why do I still want change for more women in STEM?

Thoughts on why current academic culture and lack of governance may be a root cause of gender issues in STEM – explained with examples from the last 30 years and my experience as the first tenured woman physics professor at ETH Zurich.

Why haven't we seen better progress for excellent women in STEM fields? This is a personal advocacy for an open discussion about nuanced and often difficult issues, such as access to power and resources, outdated gender norms, preferential hierarchies, and informal power structures with limited accountability and transparency. I believe that it is better for all of us to solve this with better governance, and to step up our engagement in both science and politics to achieve these goals.

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My background and motivation

I was hired in 1993 into a "woman position" – sometimes termed a "quota woman". Hesitating to accept such an offer, I turned to Dr. Anthony Johnson, one of the few African-American scientists at Bell Labs, to ask his advice. Understanding the issues much better than I did at the time, he advised me to take the job – and make sure to use the opportunity to show that I can do it. Thirty years later, I continue to give the same recommendation to upcoming women in STEM. I am fortunate, and grateful, that I was empowered with a tenured professorship at a leading university such as ETH Zurich, even though it was often not easy. I have always looked around me, to observe and learn from examples of successful colleagues – in my field nearly exclusively male. I chose to have children and raise a family, sharing parenting with my full-time working husband, while also working (more than) full-time, and have established a successful career, with a great academic record covering both fundamental and applied research, including transfers to industry and support of multiple spin-off companies. I have been running a large experimental research group (Link, https://ulp.ethz.ch/group.html), typically with around 25 people, and expecting to have graduated 101 PhD students by my retirement. I hope to inspire the next generation of women that "Yes you can do it!"

However, we continue to lose too many talented women with the current academic culture here and around the world [1].

When I started at Bell Labs as an independent researcher in 1989, I did not expect – nor get - a "warm welcome", but I did expect to be rewarded for performance. And I was. When I arrived at ETH as a tenured professor in 1993, I also didn't necessarily expect a "warm welcome" from all my colleagues - which unfortunately proved to be the case more often than not. My expectation, however, to continue to be rewarded and respected for performance was sadly misplaced.

As I now enter the retirement phase at ETH in 2021, I have not totally given up my hope for a "warm welcome", but more importantly, I still do expect performance-based treatment. I would

not have believed in 1993, almost 30 years later, that we have not have made more progress. Maybe I am ambitious, or too optimistic, and even sometimes a hopeless idealist expecting too much. As a scientist, and a woman, I have watched, learned, and studied these issues more and more over the last 30 years, and particularly in the last decade. My conclusions, based on integrating all of my learning and experiences, continue to point to a key root cause: the current culture with informal, mostly male-dominated power networks with inherent gender biases, limited accountability and transparency in decisions and in resource distribution, negatively affects women in leadership positions, and discourages the next generation from taking on leadership positions. My goal is to change this with better governance (Link, https://ulp.ethz.ch/news/ulp-news/2022/01/open-letter-signed-by-145-women-scientists-expressing-their-concerns.html)

Let me illustrate my motivation for this goal with some examples from my time at ETH Zurich. I want to take more time to explain my vision with regards to culture change and governance. With my story I hope I can encourage more of you to engage.

My current situation

Why do I say that I am still hoping for a "warm welcome" even now? This stems from my current experience with the retirement process at ETH. During the last three years before their official retirement date, a professor at ETH begins the retirement process (note that, although the statutory retirement age in Switzerland is 65 for men and 64 for women, ETH has applied the retirement age of 65 for both female and male professors). ETH professors can potentially extend their employment for up to 5 years based on excellence and/or relevant contributions. In my case, in Nov. 2020 I requested a one-year extension, from July 2024 to July 2025. After this request, new rules were put in place in the physics department in March 2021 (Link, https://ulp.ethz.ch/news/ulp-news/2021/11/new-rules-at-d-phys-affecting-prof-kellers-activities-at-eth-zurich.html). To comply with these new rules, I gave up my office (Link, https://ulp.ethz.ch/news/ulp-news/2022/01/prof-keller-loses-her-office-at-eth-zurich.html) and dismantled a key scientific system, the Attoclock (Link, https://ulp.ethz.ch/news/ulp-news/2022/01/the-end-of-the-attoclock-at-eth-zurich.html), so that I can ensure that my last PhD students have office and lab space to finish their research at ETH Zurich. These sacrifices had to be made, even though I cannot see any urgent need for more space in the department. In addition, my request for a one-year extension beyond my normal retirement age resulted in a "tied vote" by my colleagues in the Institute of Quantum Electronics (IQE), with no further explanation (Link, https://ulp.ethz.ch/news/ulp-news/2022/01/professor-kellers-request-for-a-one-year-extension-beyond-normal-retirement-age-resulted-in-a-tie-vote-in-her-institute.html). This vote should have been based on the performance of the professor asking for an extension. With the objective measures of success and international recognition that my lab has received over thirty years (Link, https://ulp.ethz.ch/people/kursula/honors-awards.html), I cannot help asking myself 'why' exactly my request for a one-year extension was turned down by my colleagues.

I do not want to be pushed out through the backdoor at ETH Zurich after more than 30 years of outstanding performance in teaching, research, and significant community service. Yes, I was a quota woman – yet look what I have done with it after 30 years! I am not perfect and made my share of mistakes (as do we all). But I believe that I became a better person because of my experiences as a woman who, with a strong mathematical and analytical mind, did not "fit" the stereotype that "women can't do math/science". I also had the civil courage (perhaps too much for my own good) to defend my capacity to do my scientific work and to stand up

and advocate for a broader sense of fairness in this male-dominated work environment. In the end, I believe that my experience can be useful to help accelerate change for the next generations, not least in Switzerland and elsewhere in Europe.

Today I want to contribute and leave the ETH a better place than I found it. I would like to inspire more women to choose a career in science and technology and help them to feel more welcome. I am at a good point in my life, a woman pioneer in physics in Switzerland, and would like to continue to contribute to and work for an academic culture that welcomes and empowers a broader diversity of researchers.

My education and professional experience

For the Swiss education system, my career can only be seen as a success story – coming from a working-class family, growing up in Switzerland, with access to excellent, affordable education leading to one of the best universities in the world. I was the first in my family ever to attend a university. The excellent reputation of ETH Zurich opened doors for me to enter the international science world.

I am also a success story for the international science community. I finished my doctorate at a top US university (Stanford) with first a Fulbright Scholarship and then an IBM Research Fellowship. At Stanford I had the privilege to learn from many outstanding international scientists (at that time, all male except for one visiting woman professor who helped me at a critical phase of my career). Their generous efforts included building the science community and encouraging the next generation to follow the highest scientific, moral, and ethical standards. These standards also motivated me to be part of this for the rest of my life, and to expand and keep our knowledge horizon in the public domain, a vision that truly motivated me. And indeed, I have no regrets, and I am still proud to be part of this international science effort.

I truly have had an exciting life, and well beyond my own expectations starting as a young girl in a semi-rural part of Switzerland, where women were expected to become housewives and only received full rights to vote in Switzerland, 12 years after my birth.

After Bell Labs, I didn't receive my "warm welcome" at ETH Zurich in 1993 either, as already mentioned. Why not? Let's look at the history. After a national demonstration by Swiss women in 1991, the political pressure increased to hire more women professors at ETH Zurich, which at the time was almost entirely male dominated. I was one of the first 10 women hired soon after the 1991 events, an initiative supported by then ETH president Nüesch. Unknowingly, I received lower starting funds than my male peers and colleagues, but at least a written promise to receive additional support based on my performance. That was fine with me, as I had always been rewarded for performance. I had graduated in 1984 as top of my physic class at ETH with a diploma (masters) degree in physics, received a guest student position at Heriot Watt University in Scotland to study optical computers and also to learn English, completed a PhD degree at Stanford University in California in 1989 after only 3.5 years, and started my independent research career at the world-leading AT&T Bell Laboratories. I could skip the typical postdoc appointment, receiving an offer from Bell Labs as a member of the technical staff (MTS). This independent research position from 1989 to 1993 prepared me well for my time at ETH Zurich – I knew what I wanted to do and what resources I needed to do it.

I thought that I had broken through the (conventional) glass ceiling - until I hit another barrier that nobody had mentioned. I have come to call this the "gorilla glass ceiling" (after the chemically strengthened glass used in mobile phones [2]).

Glass ceilings and governance – my experience in the ETH physics department

What is the conventional glass ceiling that most professional women face? In my case, becoming a tenured professor at ETH seemed to indicate there was no glass ceiling. Even with my first high-impact research results, however, I still struggled for 10 years – a decade - to obtain the needed additional resources that had been promised when hired. My promotion to full professor was stopped after becoming pregnant in 1996, and only moved forward after much (painful) internal politics. For the first 10 years, I was not included in internal leadership positions, e.g. head of the Institute of Quantum Electronics (IQE), even though I volunteered every time. This is normally the first leadership position for a new professor. After ten years, most of the older generation professors had retired, leaving me as the most senior professor in the institute, which had quite a generational age gap. In 2003, I was elected the IQE head for the first – and only, as it turned out – time.

The need to change governance at ETH arose from its remarkable growth, and particularly the increase in the number of professors. An early attempt to improve the governance at ETH was made in 2006 by the newly-appointed president Prof. Ernst Hafen. In retrospect, these changes came too quickly and too early for the ETH culture, leading to the early termination of Hafen's presidency and entrenchment of departmental autonomy.

Since then, the governance of each department at ETH has evolved in different directions, some better than others. The physics department initially benefited from the idealistic leadership of Prof. Jürg Fröhlich, who established more transparency in the operational guidelines of the department. He also recruited members of the upcoming younger generation to engage and serve in the department leadership. In 2007 Prof. Gianni Blatter was elected as the head and myself as the deputy head of the department.

It soon became clear, however, that his and my leadership approaches and vision were not sufficiently compatible. I continued to voice my concern about the low number of women professors in the department. I also proposed changes to increase the accountability and transparency in the distribution of internal resources (e.g. annual operating budget and space), and to incorporate some performance criteria for the evaluation of professors and assignment of resources. These efforts were certainly not welcomed, and ultimately resulted in my exclusion from any and all leadership positions within the department after 2009.

Since I continued to point out that the department was not following the rules that had been established under Prof. Fröhlich, the department's solution was to change the rules – limiting transparency to the leadership and committees of the department, a concept that was given the beautifully oxymoronic name of "level-dependent transparency". These new rules were adopted by the department in March 2013, opposed by only a handful of professors – as I recall, myself and the two astronomy professors in the department. They were then approved by the then ETH president Prof. Ralph Eichler, also a physics professor. The informal power structure within physics continued with very limited accountability and transparency. Rather large financial reserves were accumulated. Anybody who did not "play ball", lost the "goodwill" of the department with potentially severe consequences. Uncooperative professors could be completely side-lined by the "in-group" through majority votes in their institute or department.

The progress of gender diversity in the physics department

After the initial progress in the early 90's with hiring of myself and Prof. Felicitas Pauss, very limited progress was made regarding recruiting women into the physics department. In the next 22 years, from 1994 to 2016, all the 24 professor selection committees resulted in male professorships – a record of 24:0. On the level of permanent senior-scientist, the record was something like 33:1 excluding dual-career hires. The only other woman hired as a permanent professor during these 22 years was the astronomer Prof. Marcella Carollo, who was appointed as a tenured Associate Professor in 2002 from Columbia University as part of dual-career recruitment with her husband Prof. Simon Lilly. Of these three senior women professors in physics, one has retired (Pauss), one has been side-lined (myself), and one has been terminated (Carollo) – the first and only termination of any professor in ETH's history (Link, https://ethz.ch/en/news-and-events/eth-news/news/2019/03/measures-leadership.html).

The Carollo case warrants a short review. She was promoted to Full Professor in 2007 after the usual extensive review. But complaints about her arose in 2017, after she had ended supervision of a PhD student in her group. A formal dismissal procedure and committee were started by then President Prof. Guzzella. Subsequently, Carollo was fired from ETH in 2019 at the request of the incoming president, Prof. Joel Mesot (another physicist). This decision was counter the unambiguous recommendation from the formal dismissal committee that Carollo "should not be dismissed" [3]. Because of my concern about potential mishandling of this case, and aware of the many requests for an unbiased and fair due process in this case, all made in vain apparently, I submitted a formal supervisory complaint ("Aufsichtsbeschwerde") to the ETH Rat (Board of Regents) in October 2018 citing inadequate governance. This too was to no avail. I had personally witnessed how Carollo, in my opinion, became victim of the informal power structures in the physics and chemistry departments. This also served to depose Simon Lilly from his position then as Department Head of Physics and marginalize him within the department. During his short time as Head, he had been an advocate for better governance. His astronomy institute was dissolved, with remaining resources integrated into the particle physics institute, leaving Prof. Lilly as an independent professor with no institute. President Guzzella also unexpectedly stepped down as president at the end of 2018.

After my efforts within ETH, following complicated internal guidelines, had proven fruitless, I finally began to speak out publicly in 2019 to try to help my women colleagues, including protesting the apparent serious mishandling of sexual harassment cases of women students in the Department of Architecture and the treatment of other women professors at ETH, and continued to refuse to publicly support the controversial decision to terminate Carollo. I then received an official reprimand from the ETH President Mesot. I continue to contest this reprimand through the official channels, initially through the "Beschwerdekommision" (Appeals Commission of the ETH Domain), and now at the "Bundesverwaltungsgericht" (BVG, the Federal Administrative Court), one step before the final Swiss Federal Court.

My leadership roles empowered by the Swiss National Science Foundation

Outside of my department and ETH, I was able and invited to step into leadership positions. I was empowered by my Swiss colleagues in 2010 with the directorship of the National Center for Competence in Research (NCCR) for Molecular Ultrafast Science and Technology (MUST, http://www.nccr-must.ch/home.html), a major 12-year cross-disciplinary research program supported by the Swiss National Science Foundation.

The award of the NCCR carried an obligation to promote equal opportunities in science, and this became a key aspect of the MUST project. This support from the NCCR enabled me to realize a long-held goal of establishing the ETH Women Professors Forum (WPF) in 2012 (Link https://eth-wpf.ch/), where I served as the first elected President until 2016. A major initial goal of the WPF, further advanced by Prof. Janet Hering, Director of EAWAG and the second elected WPF President, was to push for better governance at ETH with support from senior women professors within ETH and EPFL.

Another key strategic technical vision of the NCCR MUST program was the multi-disciplinary platform for Femtosecond and Attosecond Science and Technology (FastLab, Link https://fastlab.ethz.ch/). The FastLab vision had been included in the original NCCR MUST proposal and was initially endorsed by both the ETH Physics Department and the university leadership.

In 2014, the Physics Department started to express concern about my "accumulation of power" and the claimed problems of hosting two NCCRs in the department - the second NCCR was led by a male professor colleague in the department and involved a large fraction of the department. Difficulties also arose regarding the leadership of the FastLab: my role and leadership in that project were no longer supported by the department and university, and a younger male chemistry professor was selected to be the leader of the project – again by the informal power structures within the physics and chemistry departments, and despite an obvious lack of support from the majority of the FastLab team. The result of all this was that the FastLab was first postponed and then finally cancelled last year, on the recommendation of Vice-President for Research, Prof. Detlef Günther – a professor of chemistry.

A broader gender perspective

The famous 1999 MIT Report (Link, https://web.mit.edu/fnl/women/women.html) helped me at a difficult time for me in academia and at ETH. My choice to start a family, with two children born in 1997 and 1998, had led my department questioning if I could fulfill my responsibilities as a professor – never an issue for similar male colleagues with similarly-aged young children. Promised on-campus daycare support was only partially fulfilled, and my requests to the then ETH president for help in 1999 were rejected: "children are a personal matter" and, I was told to "shut up or else".

The 1999 MIT report also helped to identify the need for the creation of the Women Professor Forum (WPF, Link https://eth-wpf.ch/). My motivations are explained in more detail here (Link, http://www.nccr-must.ch/equal_opportunities/eth_women_professors_forum.html).

A first survey of the WPF highlighted important issues that were adversely affecting women professors in the ETH Domain [4]. More official surveys followed, at both the ETH Zurich [5] and at our sister university in Lausanne, the EPFL [6]. The EPFL produced an additional detailed internal report, but to-date this still remains confidential. This is unfortunate, as it should contain a lot of learning material that would help the broader community to better understand these issues. It even seems that the leadership may have been more focused on keeping aggrieved women quiet, and rather more concerned about limiting reputational damage than on actually fixing the problems.

It has become increasingly apparent that the "Carollo case" in the physics department was only one of many cases of women professors targeted by academic mobbing, outdated gender norms, and unfair hierarchies and power structures. Some senior women colleagues recognized these issues very early on, but were unable to find ways to have these problems addressed within the ETH, the EPFL or by the supervisory body, the ETH Rat.

And unfortunately, the grievance procedures for resolving disputes within the ETH domain seem insufficient to effectively address and solve these kinds of issues. They are typically not sufficiently independent of the affected institutions themselves. They take an extremely long time (often many years) and place substantial financial burdens on those affected. In contrast, the leadership of the institutions can use seemingly unlimited public funds to hire top lawyers to defend their disputed decisions.

This opens up the fundamental question of how much Switzerland itself is willing to uphold its own laws with regard to "equal rights" within its leading institutions.

These issues are not exclusively a Swiss problem. On 18. Nov. 2021, a large number of concerned women scientists submitted an open letter to the Max Planck Society leadership addressing disturbing trends in the treatment of women in academic leadership (Link https://ulp.ethz.ch/news/ulp-news/2022/01/open-letter-signed-by-145-women-scientists-expressing-their-concerns.html).

And it is worth emphasizing that women as well as men often demonstrate gender biases against other women [1]. It is especially troubling that women, often ones that themselves have not experienced the glass ceiling in their own careers, are weaponized to oust unwanted senior women. When I started my successful career in science, I thought there was no longer any gender bias, but thirty years later, my experience has forced me to change my mind. A book that I like to recommend to younger women in STEM is given in [1].

I have seen many cases, involving both junior and senior women scientists, that often start with them saying "No" to the wrong person (typically male) – i.e. a person who is well connected with a formal - or informal - power network. Some of these networks allow more toleration of sexual and/or gender harassment, and push and sometimes even seem to cross the limits of international guidelines in scientific integrity. They can impugn the reputation of certain individuals, but at the same time can choose whether to follow given rules - or not, or even to create new rules - so as to protect the favored in-group or person.

One often hears concepts of "goodwill", "common sense" ("Augenmass"), democratic process, majority votes. These concepts work fine under good (optimal) conditions. However, under pressure to change, judgement calls of individuals within informal power structures, and their arbitrary decisions on whether they do or do not want to follow the rules in particular cases, opens the way for serious biases against disfavored individuals. In such an environment, it is not only visible minorities that can become targets, but also any other "outsiders", including those who simply do not want to endorse such behaviour. Too often, outstanding people with exceptional performance and high moral standards find themselves targeted.

A threat to the credibility of science

I believe – after seeing, experiencing, and studying this issue for many years – that the lack of good governance is the root cause of the problem. There seems to be a conflation of scientific

autonomy with management autonomy, and operates as if "majority votes", very often without any accountability, are all that are needed to ensure good governance and fairness towards individuals. I believe that this very strong autonomy in management and in the distribution of substantial resources (people, budgets, infrastructure) with only limited transparency, accountability, and external controlling, coupled with ineffectual procedures to address grievances when they do inevitably arise, do not meet the international standards of best practices, and will limit the future excellence of the ETH Zurich.

It should be the task of our political leadership to step up to their responsibility to defend the fundamental principles of the Rule of Law inside our current university culture. This is not about independence in science, nor about hurting a leading university within Switzerland. On the contrary, the informal power structures can weaken and even call into question the credibility of science work being done here.

As in politics, science is also suffering from new challenges posed by the internet, with the proliferation of fake news and the impact of glossy superficial journal publications that tempt researchers to inflate their conclusions in the competition for resources and personal recognition. As pointed out by Elisabeth Bik, winner of the John Maddox prize [7], "*the danger with social media is that even a mediocre or bad or flawed paper can be taken by people who have different agendas and brought into the spotlight and celebrated as the new truth. That is a new danger that has not been there before*". We have seen the strong impact of this during the COVID pandemic. And together with politics and science, good institutional governance is also suffering from the same challenges, with some leaderships choosing to prioritize the quieting of media storms over ensuring fairness towards individuals and the application of the Rule of Law.

So, finally what about that "gorilla glass ceiling" for women? According to Troy Vettese [8]: "*The destruction of these informal networks is one of the most important reforms feminists can pursue in the academy, but likely the one to encounter the greatest resistance. Until such fights are brought into the open, the old boys' club will be protected by a shroud of silence. As an anonymous historian told an interviewer for a study carried out by the American Historical Association, "a department culture that valued 'civility' was used as a way of silencing female professors with ideas about new ways of getting things done.*"

These informal power structures are the gorilla glass ceiling that I have not been able to break through. It will take a stronger effort from us all to break through this ceiling. This will benefit not only women in academia, but society as a whole. In the end, we benefit from an academic culture that welcomes and empowers a broad diversity of researchers. Women bring a perspective to science and to management that should be valued, an addition to providing a pool of about half of the current and future STEM workforce.

We expect our best universities to strive for high-impact, Nobel-worthy research. We should also expect our university leadership to measure itself on the highest international best-practice standards. Our universities must strive for the highest standards in excellence, in scientific integrity, in governance, in avoiding conflicts of interest, and in the communication of science. Nobody says this is easy – time to try harder.

References

[1] Kramer and Harris in their book *It's Not You It's the Workplace: Women's Conflict at Work and the Bias that Built It.* For example page 62, the 2017 Forbes report is quoted, which showed that women leave the tech field at a rate that is 45% higher than men.

[2] Note that the gorilla glass is a chemically strengthened glass also used for mobile phones: https://en.wikipedia.org/wiki/Gorilla_Glass

[3] ETH Zurich published report on 10. April 2019 and can be downloaded here:
https://ethz.ch/en/news-and-events/eth-news/news/2019/04/investigation-report.html
The recommendation of the special committee, was not to fire Prof. Carollo and "*found that the repor*t [i.e. is the final report of the administrative investigation, published also on this website] *did not always paint an impartial picture*" with "*leading questions*" (i.e. the investigator was expecting an answer to be in a certain direction), and therefore "*the overall picture of circumstances … may have been presented in a somewhat distorted light*." A general problem with not really independent administrative investigations in Switzerland.

[4] Survey of issues important to women professors at EPFL and ETHZ 2019
https://eth-wpf.ch/wp-content/uploads/2019/05/WPF-survey-report-2019.pdf

[5] **19. May 2020:** ETH Zurich professor survey published
at least 23% female professors indicated that they **felt discriminated** against at ETH Zurich within the previous two years (versus 5% of male professors)
Grievance processes considered generally not good enough, but "women in particular rated the complaints process for discrimination as rather negative to very negative."
… numerous comments … calling for more institutional action for women support
https://ethz.ch/services/en/news-and-events/internal-news/archive/2020/05/checking-in-on-our-professors.html
and more details
https://ethz.ch/services/en/news-and-events/internal-news/archive/2020/05/checking-in-on-our-professors.html

You can also find some interesting ETH gender statistics here
https://ethz.ch/services/en/employment-and-work/working-environment/equal-opportunities/strategie-und-zahlen/gender-monitoring.html

[6] Published July 2020: Report of the commission on the Status of Women Faculty at EPFL
https://actu.epfl.ch/news/new-recommendations-to-improve-the-status-of-wom-4/
Serious issues that negatively affect the gender climate are:

- **Grievance procedures** – is considered a major source of undue stress and women are "targeted" with a much higher probability than men
  Need complete overhaul of grievance procedures
- Reported **lack of respect** for women professors
- **Gender bias**
- **Male dominated management culture** and predominance of men in numbers and in leadership positions **affects women disproportionately**

- **Not sufficient accountability and transparency** with regards to resource and space allocation, committee work, teaching load, and most importantly, the decision-making process

[7] https://senseaboutscience.org/activities/john-maddox-prize-2021-winners-announcement/
And quote from the Guardian, 1. Dec. 2021:
https://www.theguardian.com/science/2021/dec/01/misinformation-fuelled-by-tsunami-of-poor-research-says-science-prize-winner

[8] "Sexism in Academy", Troy Vettese, 2019, published in Issue 34: n+1, Head Case
https://www.nplusonemag.com/magazine/ and about the author

Some additional published info by Prof. Keller:

2020-9-16 Creating a university culture where women thrive
Viewgraphs can be downloaded here (there is also a link to YouTube on this page)
http://www.nccr-must.ch/nccr_must/news_4.html?4919
The talk is also uploaded on YouTube
https://www.youtube.com/watch?v=4Db49ZIfUL8&feature=youtu.be

2021-9-10 Mentoring for women in STEM fields
http://www.nccr-must.ch/nccr_must/news_4.html?5031
and YouTube
https://www.youtube.com/watch?v=XRD7D_rxXqo

2021-9-17 Unusual keynote talk invitation: Do photons show gender bias?
http://www.nccr-must.ch/nccr_must/news_4.html?5020
and YouTube
https://www.youtube.com/watch?v=I0emYhM0CHs

NCCR MUST outreach activities for equal opportunities – a 12-year effort by now:
Prof. Keller was empowered by the Swiss National Science Foundation to support equal opportunities. Many of her activities are summarized here (Link, http://www.nccr-must.ch/equal_opportunities.html).

Her first publication starting a new OPN column, Reflections in Diversity (Link, http://www.nccr-must.ch/equal_opportunities/opn_column_reflections_in_diversity.html) (from OSA, respectively OPTICA, Link https://www.optica.org/en-us/home/):
OSA Viewpoint, Time to try harder was published in Feb. 2011 (Link, http://www.nccr-must.ch/equal_opportunities/opn_column_reflections_in_diversity/opn_viewpoint_february_2011.html)