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Women in Physics: an interview with Lyndsay Fletcher

Lyndsay Fletcher **is a Professor of Astrophysics, specialising in solar physics, in the School of Physics and Astronomy, University of Glasgow and the Rosseland Centre for Solar Physics, University of Oslo.**

Credit: Jenny Anderson.

Her research is in solar flares using multi-wavelength imaging and spectroscopic observations from ground- and space-based observatories to study the magnetic field, energy transport, and energy dissipation in the solar atmosphere. Lyndsay is engaged in public understanding of science, giving frequent talks to amateur astronomy societies, schools and other groups. She has campaigned for diversity in physics and supports the Institute of Physics Juno Project. For her extensive work in promoting diversity in science, in 2017 Lyndsay received the Herald Scotland 'Diversity Hero of the Year' and the Suffrage Science award in the engineering and physical sciences category.

Why did you choose to be a physicist?

I liked all my subjects at school, but physics was the only one that I was really curious about. Encouraged by my teacher I decided on a degree in physics, adding astronomy after reading a couple of popular books and visiting the Royal Observatory in Edinburgh with my dad. I also liked the idea of doing something that was considered at that time to be a bit unusual for a girl, especially after a woman careers adviser at School told me I would be better doing an English degree. I found this doubly unhelpful as it seemed obvious that a degree in physics offered better career options. After my degree, I wanted to try research and chose a Ph.D. in solar physics because I had enjoyed my courses in plasma and stellar physics, and solar physics combined them. Thereafter, I knew I wanted to work in solar physics because I loved the subject and felt like part of my research community. I was prepared to enjoy it while it lasted and, for a while at least, to go where the jobs were.

What scientific developments are you most excited about?

I get very excited every time a new solar space mission or telescope becomes available. Right now, the Daniel K. Inouye Solar Telescope in Hawai'i is a big thing; it's by far the most powerful solar telescope we have ever had. DKIST observations will make huge advances in our understanding of the Sun's magnetic field, and magnetic activity such as solar flares—my own research area. I'm also involved in a great new NASA mission called the MUtislit Solar Explorer, due to be launched in a couple of years, which is a novel spectrometer designed to carry out spectroscopy with extremely high resolution in time and space, capturing the dynamic evolution of the Sun's heated outer atmosphere. Developments in exoplanetary astrophysics are also fascinating, particularly work on the "space weather" influence of the host stars on their planetary systems. And beyond solar or astrophysics, the rapid developments in green technologies make me hopeful.

In your view, what are the issues women are facing in terms of diversity and inclusion in academia? What has been your experience?

Balancing family and professional priorities is a big issue for everyone, but people who are the main caregivers for family members must find this tremendously difficult, particularly while worrying about unstable employment in the early stages of a career. And those people are still primarily women. I have not had to cope with this balancing act, but I can understand why a woman considering having a family might think twice about academia. Academic institutes must recognise the impact such issues have on career progress, and support people to stay the course.

Then with a more secure academic position in physics, comes the requirement for women to be a representative for their gender, as well as for their discipline or career stage. It's great that, for example, diversity on committees is now the norm and that diversity initiatives (like this article) are so broadly promoted. But for the women involved it is an additional load. We need to keep at it, or we'll drift backwards, but it takes time and effort.

If you could change one thing (or two)—what would you change to increase the proportion of women studying physics?

There are no easy fixes, but I think that it starts with cues from society about what are expected or suitable aspirations for girls and women to have. There is also the problem that many people don't really know "what physics is for". When I was involved with University Open Days, on average 40% of the student visitors to Physics and Astronomy were girls, who reported liking physics, but didn't know what kind of job it could lead to. It's important to develop a better understanding among girls, and their families, of where physics can take you, as well as better—and non-stereotypical—representation in the media of women working in physics-based careers.

Have you had any setbacks in your career—how did you handle them and what did you learn from them?

I've had career failures and disappointments, but in retrospect, I wouldn't call them setbacks. I was upset for a long time when I was turned down for a promotion as it's hard not to take something like that personally. But it gave me a reason to focus on how to improve my case, which stretched my ambition and achievement, and in the end, did my career a lot of good. It takes more to

upset me now, and anyway career setbacks are far from the worst thing that can happen.

Were you in a minority at any stage of your career and did it make a difference?
I've always been in the minority, but I have felt supported, encouraged, and welcomed throughout my career. I had many colleagues around me for friendship and affirmation—women and men—and also enough women in senior positions for me to know what I could be aiming for. But being in a sizeable minority, as I am, feels very different from being in a tiny minority. Some years ago, as an established academic, I attended a workshop in a related discipline where I was one of only two women out of around 50 attendees. I felt so out of place, in a way I never had before, and understood what it might have been like being the sole woman in a physics lecture. Women who are currently in a minority of 25% or so owe a lot to those who were in a minority of 1%.

Have you engaged in Women in Physics activities yourself, organised any or participated in any?
I've been involved in Women in Physics activities at all stages of my career, for example helping out at physics workshops for girls as an undergraduate and PhD student and leading a schoolgirls' residential astronomy workshop when I was a postdoc in the Netherlands. As an academic, I led our equality and diversity committee for many years. I took the view that making changes to benefit women in physics benefits all of us, and perhaps that perspective helped with the great buy-in and participation by colleagues in the School, which led to several equality, diversity and inclusion (EDI) successes. But I also realised how long it takes to effect lasting and meaningful change. The considerable inertia in a large organisation requires continued awareness-raising, pushing and vigorous reminding before the change is really embedded.

This interview was conducted by the editors of Communications Physics.

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