

# Studying and working in physics and astronomy

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## In Conversation with Rosalyn Pearson

While many students may never venture south of the Meadows to the King's Buildings, some might say that the same inequalities in academia persist or are even greater on Edinburgh University's second biggest campus. In this interview with Rosalyn Pearson, a 3<sup>rd</sup> year PhD student in the School of Physics and Astronomy, I discuss what it's like to be a non-binary woman in a department comprised of (almost) solely cisgender heterosexual white men.

By Justin White

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**Justin: Hi Rosalyn! Thanks so much for meeting with me. Please introduce yourself.**

Rosalyn: Yea of course! I'm a 3<sup>rd</sup> year PhD student in Particle Theory, and the Postgrad Rep on the Equality, Diversity and Inclusion panel, I've been a tutor for Gauge Theory, Quantum Field Theory, and Problem Solving in Theoretical Physics, which are all master's courses. I enjoy doing dancing and performing with the Edinburgh Bhangra Crew, which is an Indian

folk dance, and I've also taken up Olympic weightlifting but that isn't happening much in lockdown of course.

**J: Olympic weightlifting wow, that's really impressive!**

R: It's work in progress: you start very bad and you get a little bit better. I also like going for walks and climbing trees and stuff, I'm trying to do a bit more of that now.

**J: As a child I always climbed trees, my parents would always have to get me down. \*laughs\***

R: My parents got upset at me because I would climb trees with a broken arm!

**J: All that aside, when did you become postgrad rep for the Equality, Diversity, and Inclusion (EDI) committee?**

R: Only about a year ago, so I had a friend in the group, Izzy, who was the previous postgrad rep, so when she left, she sent an email asking people to take over, and Andres and I were both interested so we both became postgrad rep.

**J: What could you suggest the EDI committee should do to encourage**

## **EDI across the School?**

R: EDI has a lot of aspects to it. I've noticed there's a lot of focus on the Athena Swan Award, which is a good thing, but that is only one facet of a lot of stuff that could be done, and it's not something that people see the results of that easily when they're students in the school.

For those that don't know, the Athena Swan is an award established and managed by Advance HE (previously the Equality Challenge Unit) that recognises and celebrates good practices in higher education and research institutions towards the advancement of gender equality: representation, progression and success for all staff.

*"On a basic level we need to have more frequent social events across non-academic and academic staff and students to try and build a sense of community and inclusion and have a better communal space for that."*

**J: I was asking this because if you  
If you could change one thing about  
the James Clerk Maxwell Building  
(JCMB), would it be something along  
these lines?**

R: If I were to change one thing, the JCMB has a problem architecturally. It should have a big canteen or communal space where the food is cheap and people want to go there, and everyone would go there. There's this problem that there're these little floors and corridors and little nooks and crannies and there's no communal area. We have the Magnet Café inside but it's crap because there isn't enough space for everyone. There's no diverse and cheap food option. We just

need a space where people have the ability to meet each other and talk.

But then again where are you going to put a canteen in JCMB?



Above: The James Clerk Maxwell Building on the King's Building Campus

**Rosalyn and I then changed topics to talk about her research in the School of Physics and Astronomy, and what it's like to be a non-**

**binary woman in a department full of cis-men.**

**J: Would it be alright if we talked about your research a bit? Could you explain your research so a fresher could understand it?**

R: Basically, I am looking at the internal structure of protons. We use quantum field theory to try and explain particle physics, but the internal structure of a proton is something we can't explain using current perturbative techniques because the dynamics are just so complicated.

When you collide protons, like at the Large Hadron Collider (LHC), you don't know what parton (part of the proton) in one is interacting with what parton in the other and we bridge the gulf between the parton level and proton level using parton distribution functions which tell you, 'what's the probability in this collision that there will be a certain parton with a certain momentum that will do the interacting in each proton'.

**J: In essence, this goes along with the idea of creating a new form of physics that goes past the standard model, is that what the future holds for your research?**

The weird thing about particle physics is that you have the standard model that holds up to extremely high levels of precision in a lot of ways but there are many indications that

it isn't quite complete. There's neutrinos and dark matter and dark energy and all this messed up stuff that doesn't fit!

*"I would describe it as the black swan analogy. In European science in the Middle Ages they only thought there were white swans because every time they looked at a swan it was a white swan. But then they went to Australia and found a black swan. So, there are black swans, they just don't live in Europe. The black swans are what the new physics is trying to find [without the colonisation]."*

**J: This is all well and good and you seem to be enjoying your research...**

R: ...well a PhD has been a bit of mental struggle because of the imposter syndrome which makes it hard day to day.

**J: I'm sorry to hear that. You talk about imposter syndrome now but before your PhD, were there any barriers to your entry into the School?**

R: There haven't been any formal barriers that I've experienced, but I did a [UG] degree that was in natural sciences not just physics.

I told my director of studies that I wanted to do Physics in the second year, and he was like 'no, you should definitely do geology, that's your path'.

I think that was a barrier because a lot of the time

throughout my UG degree I just felt like dropping physics and feeling like I couldn't do it, and a lot of that was perpetuated by me being a woman. I didn't want to be the only woman that was really, really, bad.

"I wanted to be bad because I was bad, not bad because I was a woman, and that's something I still have a problem with."

**J: Do you feel like there was a pressure that if you were a woman in physics you couldn't just be okay, you had to be this role model for all women?**

R: A lot of people feel like that – you have to prove yourself a bit more because you don't want to let other people down. That was a barrier because I felt like dropping physics on and off for a long time. I have experienced this issue in my PhD as well because it's very male dominated [and]...you just feel like everyone is viewing you in this context of being a minority.

**J: The fact that you pass as a woman is always attached to the things you say, and people are always going to interpret you differently...**

Rosalyn then goes into a personal experience in relation to this statement, which she wished to be redacted from the final interview.

**J: Would you say then the School has a bias against women that still needs to be broken down? How could the School better answer to the needs of women scientists?**

R: I think it's difficult because my department has a particular issue with there not being many women. I don't think I've really experienced any direct sexism from male academics, but rather it comes from an environment that is not diverse, and it's not just in terms of men/women ratio. There are few visible LGBT+ members or ethnic minorities. People [just] want a sense of community.

**Rosalyn and I switched conversation here to recognise our privilege in being in such a position.**

R: I would like to emphasise here that I am non-male, but I fit in perfectly with the demographic of particle physics students, I'm white, come from an affluent background, I did my UG at Cambridge where half the department came from, and yet I have had a such an intense feeling of alienation. And I don't know what it must be like if you come from other backgrounds – it must be horrendous.

*“To feel like a minority here as a white non-male really demonstrates how un-diverse the School is.”*



**J: I couldn't agree more. As a final comment on this, would you have any advice you might give a first year, or someone that wants to onto a PhD who could experience the same things you did?**

R: Realise that if you are doubting yourself and thinking you're too stupid and not good enough to do a PhD then that is a really normal thing to think. You are often around a lot of people who try and sound like they're confident and know loads of stuff and they'll try and put you down with these mind games.

A lot of these people are just flouting their long words to sound clever. They are just trying to appear brash and confident, and it's really easy for someone to do that if they feel entitled to do that and come from a history of privilege.

The whole way through when I have met PhD interview candidates that are worried, as soon as you start saying 'don't worry, I have no idea what I'm doing, I feel like a complete moron' they'll be like 'oh my god thank goodness it's not just me', and there are so many people out there that think that. I barely believe in myself, but I've gotten a lot better at just trusting myself, if they've taken you onto the PhD programme then you deserve to be there. We need to feel more honest and have a change in attitude about what you do or don't know.

**J: I think that's really important, because I've definitely**

**been there as an UG student and I don't even know what I'm doing half the time \*laughs\*.**

R: The other thing is make sure you have a good life outside your PhD. It's not worth sacrificing being happy to do PhD work. At the end of the day you need to work to earn the money to live so it's good to do work that you enjoy, but your life is the most important thing to focus on.

**J: That's really important for everyone, not just PhD students but academic and non-academic staff and even students.**

**In our final part of the interview, we switched topics to talk about Rosalyn's identity and belonging in the LGBT+ community.**

**J: You said you self-identified as non-binary, do you feel like you have anything to say about LGBT+**

## issues?

R: I've always been on the fringe of LGBT+ because I've never felt that confident.

*"At the start of my UG, I would say I was genderfluid and in a more masculine time than I was now. I felt the trans community was a bit ostracised in the LGBT+ group there. They didn't really fit in, and I was massively questioning everything, so I didn't even really feel like I fitted in."*

I've always felt reluctant to engage with that community so much. I identify with it still even though I haven't been that involved, if I feel if there was somewhere really encouraged, I would have gone to that.

But I have noticed people wearing these rainbow lanyards, that got introduced at some point, I thought that was really nice. That gives you a little boost, like 'oh that's nice, that's friendly.' It creates a nice atmosphere that is accepting.

It's nothing big and promotes the idea of an accepting atmosphere, in contradiction to the department which is kind of strait-laced and where people wouldn't talk about emotional matters, which I struggled with big time.

**J: Change is slow moving and it can be disheartening at times. Small things can make a big difference, like staff wearing the lanyards as you said. Although there is a fine line between performative activism**

**and actual change, is there something else you'd like to see?**

R: Pronouns! When people do that that's really nice. If we could encourage more people to do it that would be good.

**J: And I mean it's so simple... That brings us to the end of our interview, if you have anything else to add you can always email it over to me!**

R: Thanks for having me, see you at our next meeting!

## **About this interview**

This interview was conducted by Justin White as part of an initiative by the Equality, Diversity and Inclusion Committee in the School of Physics and Astronomy to highlight the research and experiences of staff and students of underrepresented communities, and was published with the written permission of the School, Interviewee, and Interviewer. Check out all the EDI interviews.

View the efforts of the Equality, Diversity and Inclusion committee at the School of Physics and Astronomy.

This opportunity was part of a Careers Service Employed on Campus internship.

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