Equity in Physics: An Introduction

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PHYS 601

31-Oct-2025

Guidelines for Today's Discussion

- This is a learning space. Ask your questions.
- Consider who you are in this space.
- Respect that these can be intense or upsetting subjects.
- Seek first to understand, then to be understood. It is ok to disagree, but please avoid making things personal.
- Mistakes are normal and that's ok; take accountability (apologize) and move on. Intent =/= impact
- Speak for yourself, not for others. Personal stories stay in the group unless we all agree that they are to be shared.
- Progress is a process. It is ok to feel uncomfortable; sit with that discomfort

Before we start: making sure we're all on the same page

- Some of the terminology we're using today might not be familiar to everyone, but equity is too big a topic to take on in one class.
- One of the things I'd like to have come out of this class, for you, is a sort of "glossary" of terms and topics that will be useful to you when you have to write EDI statements
- I've handed out post-its. Every time a word comes up you're not clear on, at any point of the class, write it down. I'll collect them at the end.
- But we'll make this fun… you get a point for every term you add

Our Goals for Today

- Introduce how positionality how we experience and interact with the broader culture of Physics
- Identify systemic barriers to equity in Physics
- Identify areas where we can act to make physics more equitable

Why do we need to talk about EDI in a Physics grad course?

- Who is in Physics is affected by the culture of Physics AND the culture of Physics is shaped by who's in it
- On a more "practical" note: grant proposals ask applicants to address EDI when discussing training and the research environment
- Today's session is structured to let you think through some of the questions NSERC asks researchers to pose to themselves in their framework & guidelines, so that you can answer them thoughtfully and authentically

Meaningful EDI Statements (according to NSERC)

These come from a specific program (for colleges) but are a good way to think about what needs to be addressed. Link

- **What barriers exist in my institution, region, field of research**, etc., and what practice am I proposing to reduce those barriers and create inclusion?
- How will this practice be carried out in detail and **specific to my research environment?** Include a timeline if appropriate.
- Why **is the initiative that I am proposing appropriate** to my research?

Before we start…making sure we're all on the same page

Diversity

The presence of difference within any collection of people.

Keep in mind historical and contemporary experiences of oppression and exclusion

Inclusion

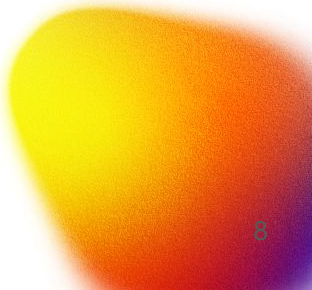
Notion of belonging, feeling welcome and valued, having a sense of citizenship in a given institution, program, or setting, which can enable our capacity to engage and succeed.

Equity

Fairness & justice in process and in results. Equitable outcomes often require differential treatment & resource redistribution. Requires recognizing and addressing barriers to opportunities

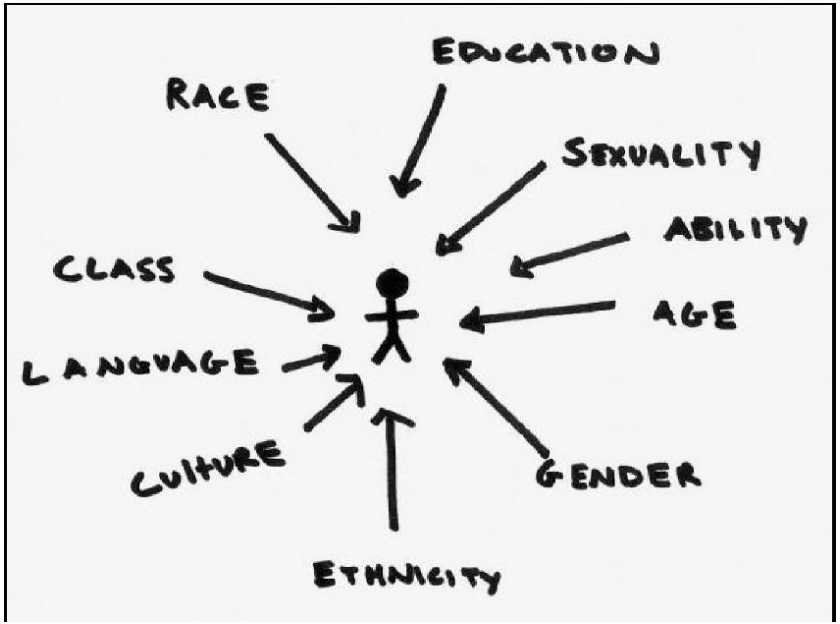
These are just the most commonly used terms, but other more expansive versions of the acronym include accessibility, justice, belonging, Indigenization, etc

Ice-Breaker:
Petals of Positionality



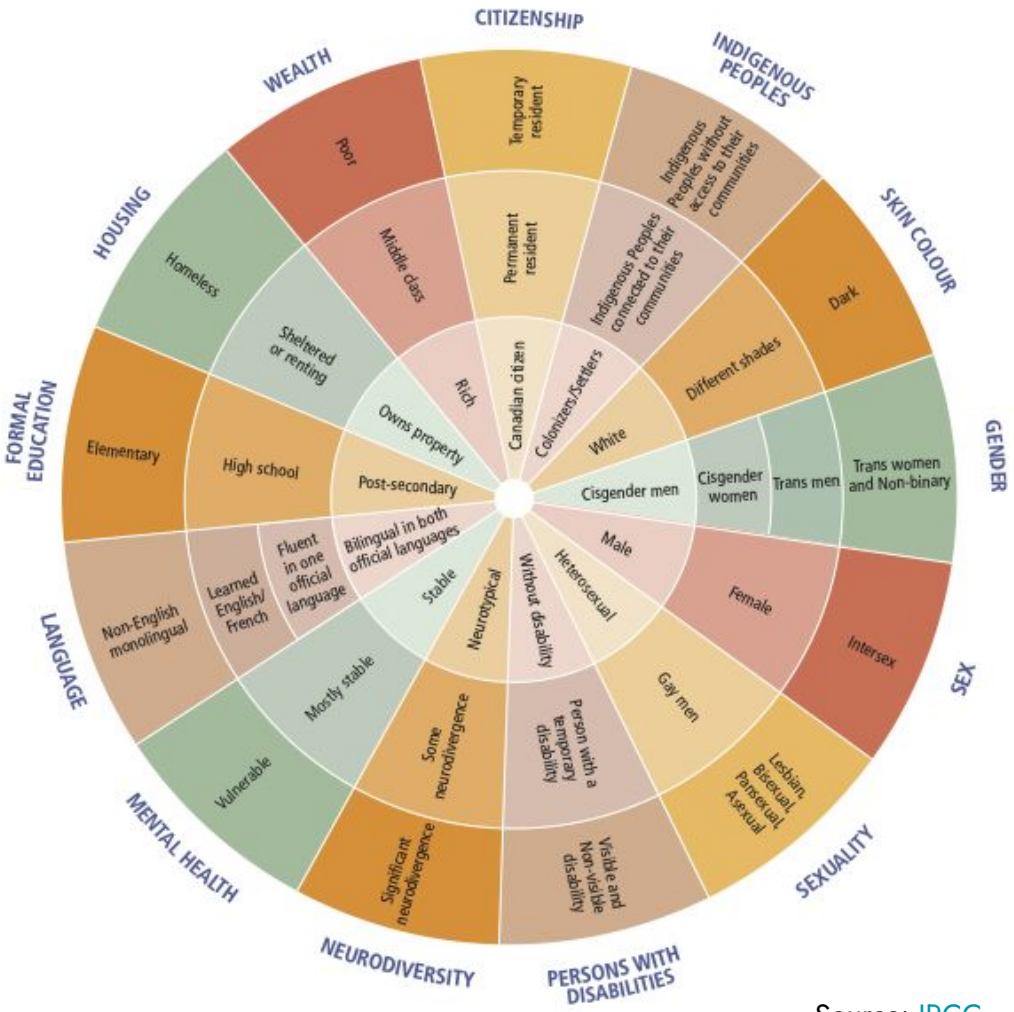
Intersectionality

- First coined by Kimberl\'{e} Crenshawe
- Framework for understanding how, different parts of our identities (as individuals) and the oppression we experience intersect with each other.
- Discriminations and inequalities are interlinked and cannot be solved alone



Social Location

- Reflects the many intersections of our experience related to race, religion, age, physical size, sexual orientation, social class, etc.
- Social location contributes not only to our understanding of the ways in which our major institutions work, but **also to our ability to access them.**



Source: IRCC

Petals of Positionality: Instructions

- You've each been given a "wheel of privilege"
- Trace around the shape closest your identity (not the individual circles, but the outer edges, so it looks like a flower or an amoeba)
- You don't have to share them; the main goal is self-reflection

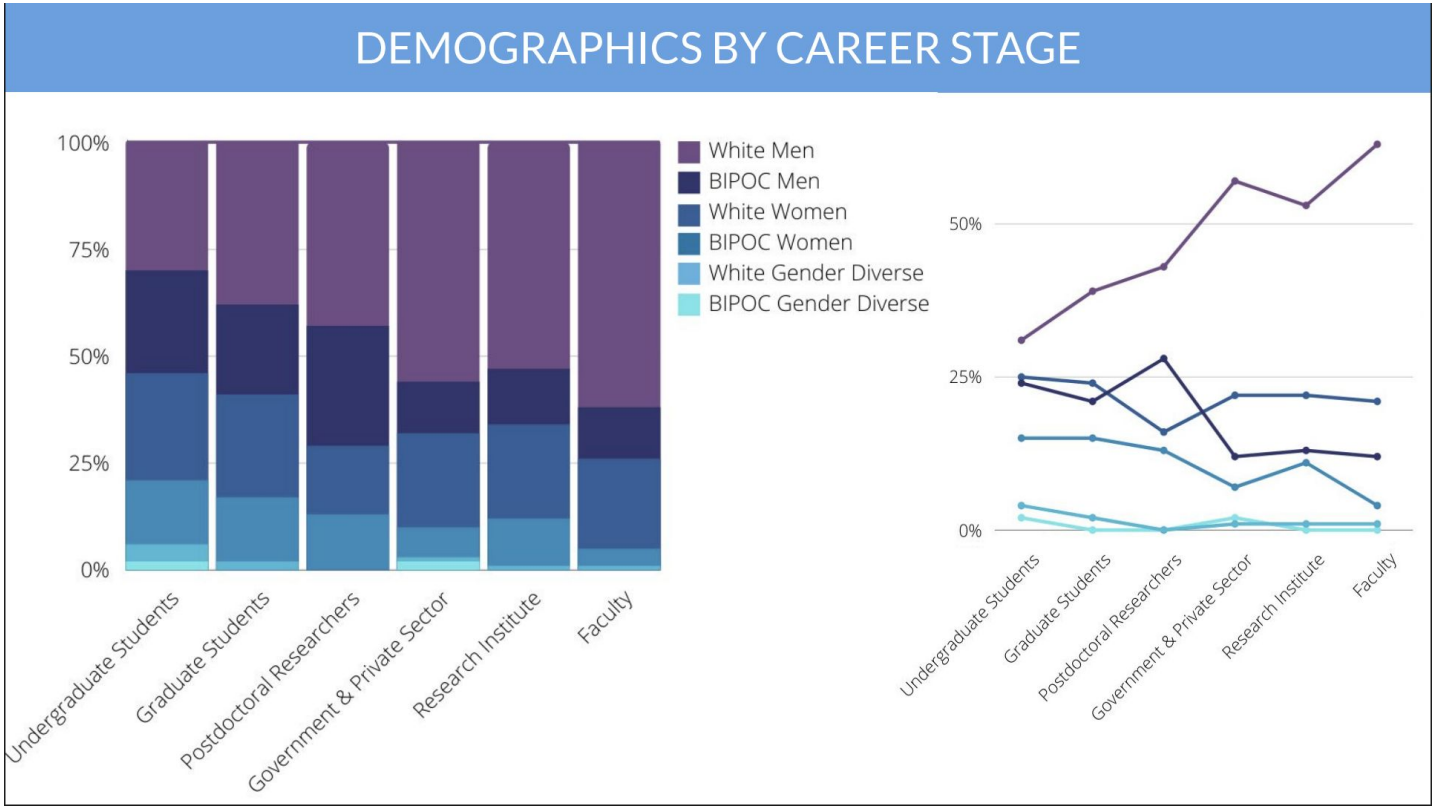
Discussion & Debrief: Positionality

- Which of these axes of identity have currency in Physics spaces and how?

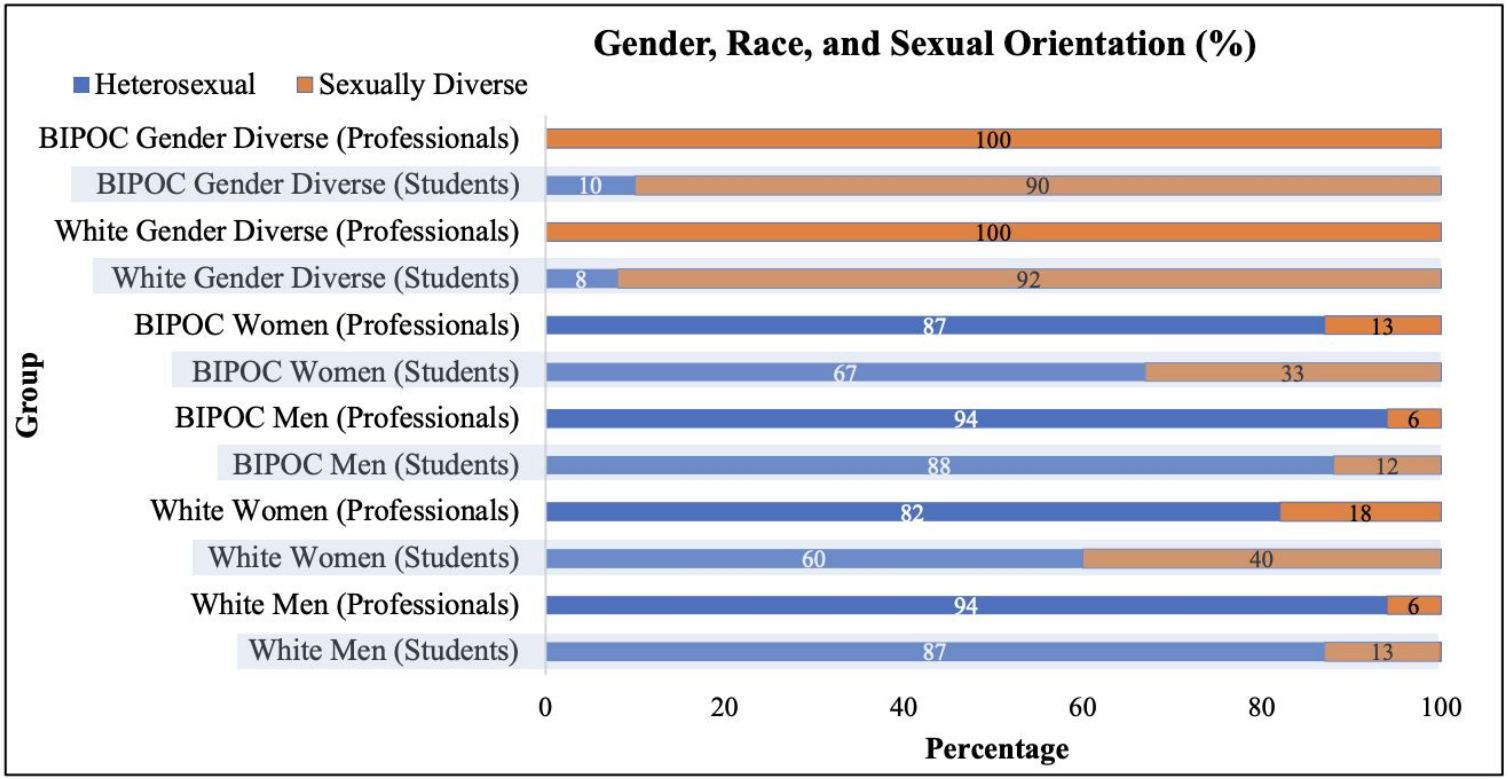
- What are some ways you've seen them play out?

Barriers to Equity in Physics

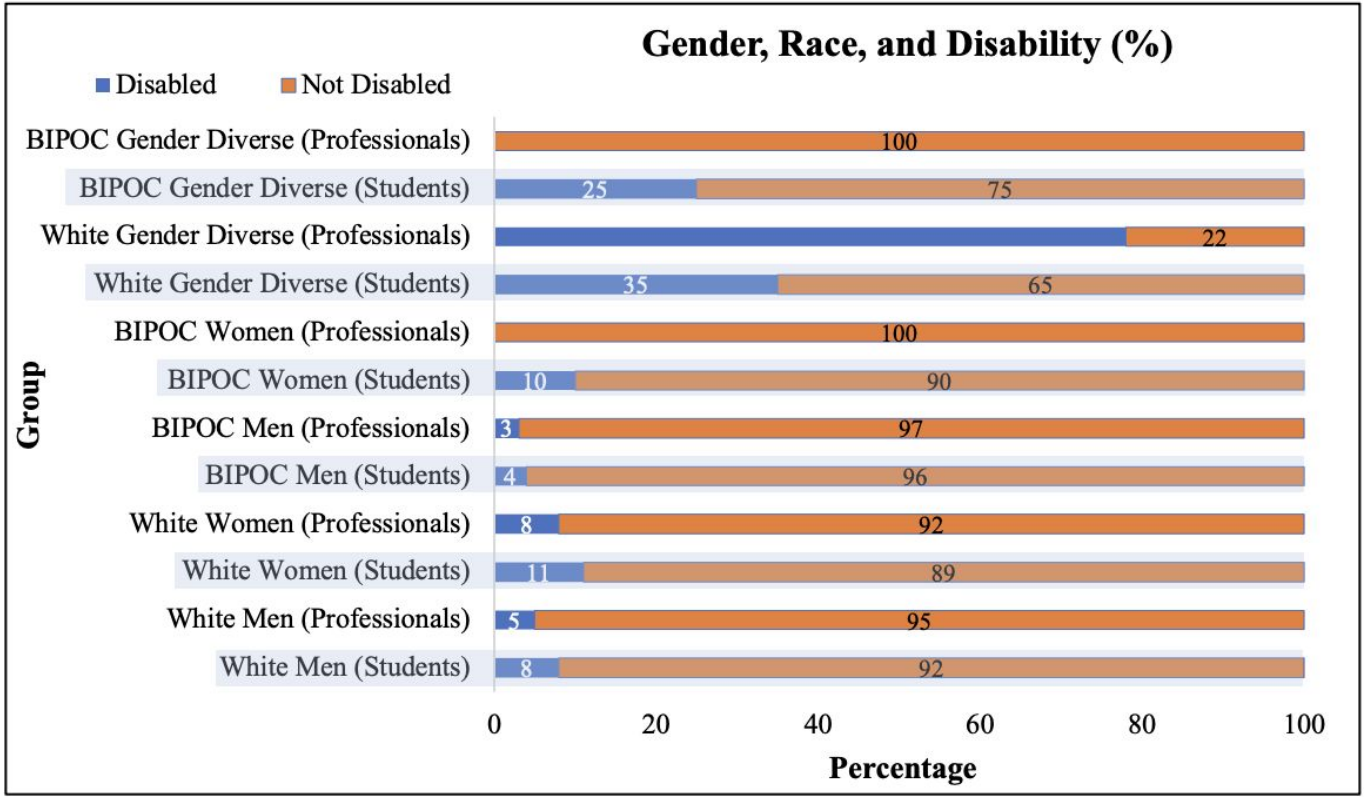
What the Canadian Physics population looks like (1)



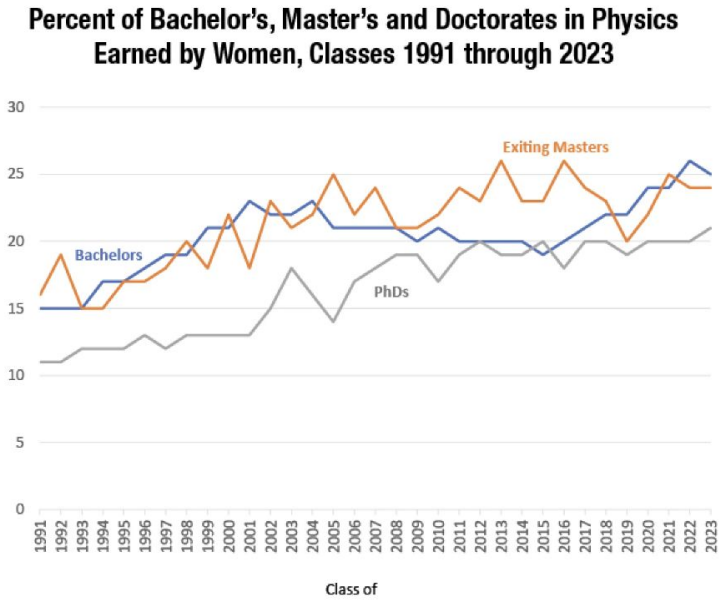
What the Canadian Physics population looks like (2)



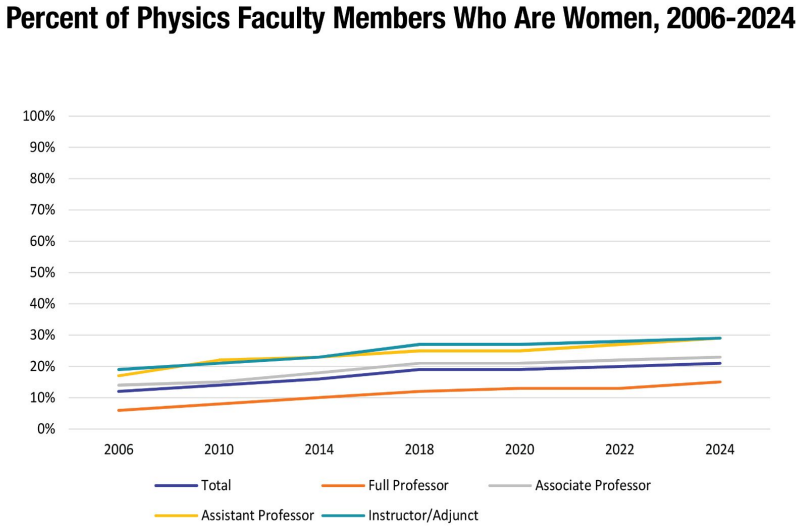
What the Canadian Physics population looks like (3)



Using US Data as a proxy: gender

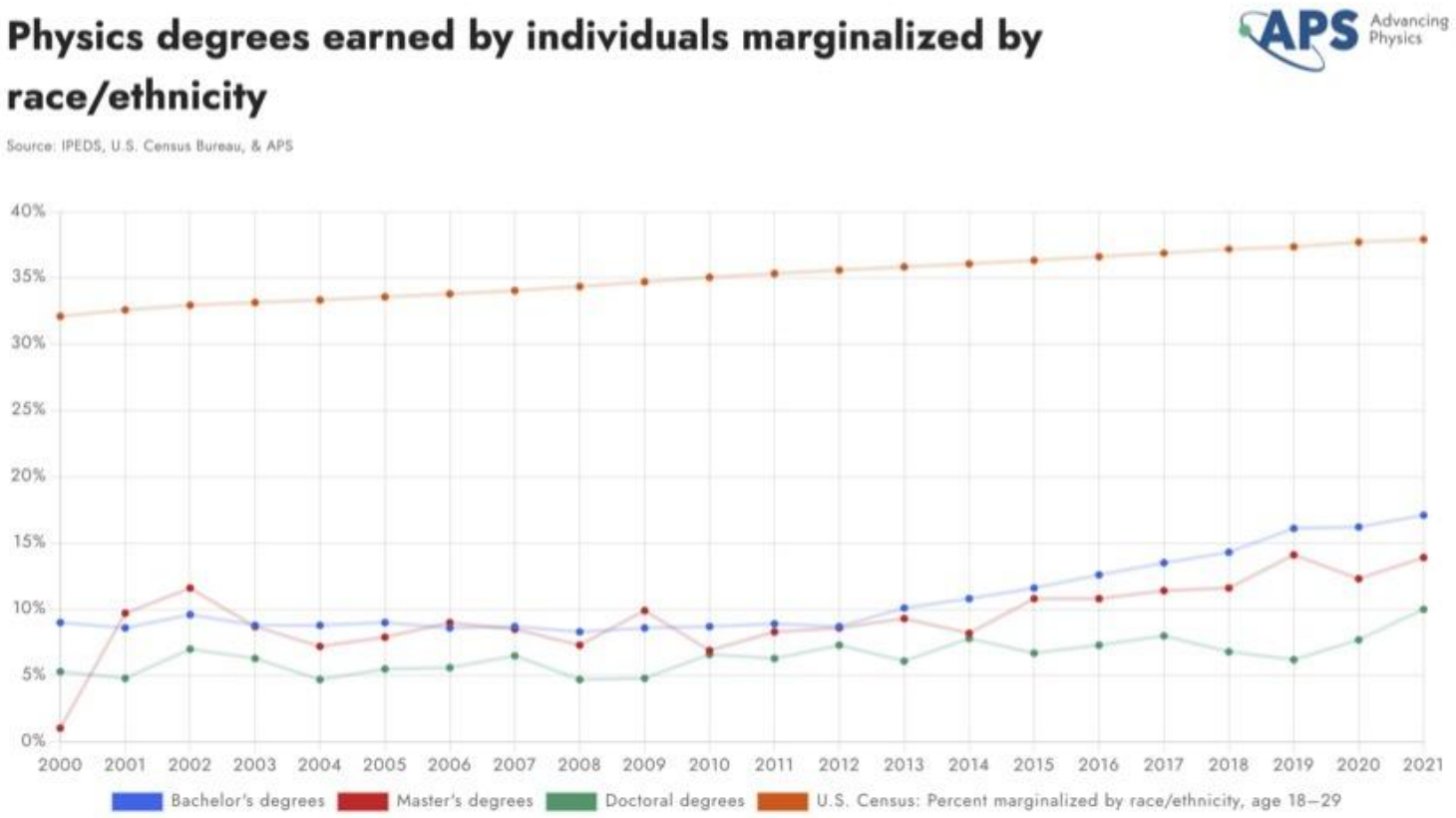


(AIP, 2025)



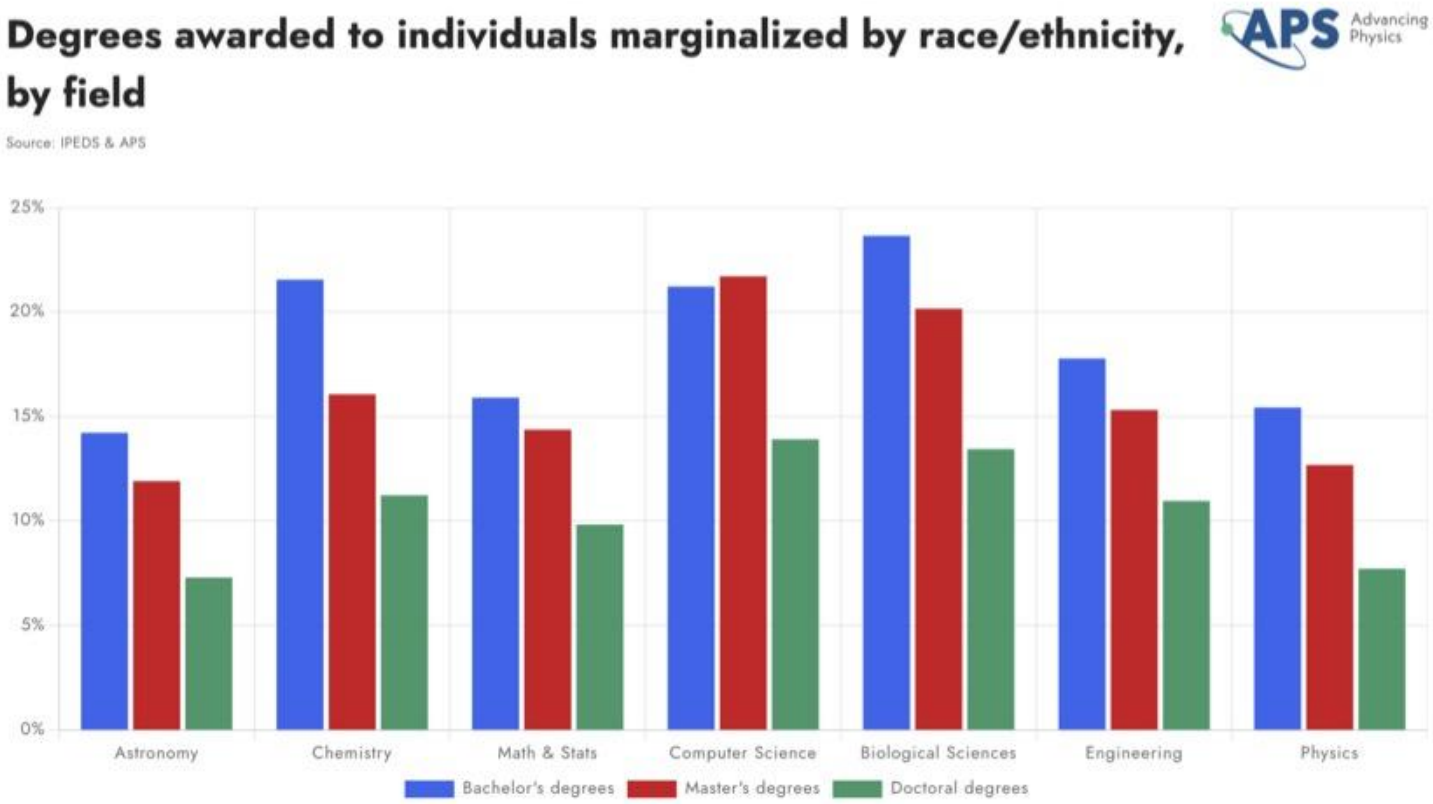
AIP, 2025 The state of the Academic Workforce)

Using US Data as a proxy: race/ethnicity



Source: APS, [Statistics on diversity in Physics]

Using US Data as a proxy



Source: APS, [Statistics on diversity in Physics]

There are limits on what the data can (and can't) say

- There might not be studies
- The studies that have been published might not be comparable because they're working with different assumptions
- Data has been binned to protect anonymity but the bins also hide nuance
- Quantitative data tells an incomplete story

Who is in Physics is affected by the culture of Physics

STEM culture is shaped by social forces

Focusing on increasing diversity by recruiting people of marginalised identities without addressing the climate is problematic

What's needed is cultural transformation, so all kinds of students feel belonging and have the opportunity to thrive in Physics

Activity # 2: Small-Group Discussion

- Split up into groups of 3-4
- Main discussion prompts:
    - What barriers to equity in Physics have you seen or experienced in the Physics / science spaces you've been in? What consequences have you seen them have (or have heard that they have)?
    - Why do those barriers exist and persist? Why haven't we seen much change?
- Goals:

    1) identify a barrier that you have seen and would like to address, and

    2) at least one reason why you think it hasn't changed
- Groups will be asked to pick a representative to share back the barrier they discussed. We will write them all on the board.

Discussion & Debrief: Barriers

- What were the barriers that you identified? Were any of the barriers we've talked about surprising to you?

- Why can it be hard to change things? What has impeded change?

How people talk about why it's hard to change things (Dancy & Hodari, 2023)

Physical distancing

- Inequity happens in places far away from me where I don't have any influence.
- Not my class, not my research group, not my department
- Not my field of Physics
- Not where I live

Social structures are responsible

- Inequity is in the K-12 system.
- [socioeconomic]class dynamics are to blame
- Historical racism and sexism explains it all; it'll go away when the old guard retire

Individual inaction is justified

- Inaction is justified when sexism and racism are not noticed
- Acting would create negative consequences worse than the racism and sexism itself.
- Inaction is justified when one does not know what to do.

1. Physical distancing

- Inequity happens in places far away from me where I don't have any influence.
- Not my class, not my research group, not my department
- Not my field of Physics
- Not where I live

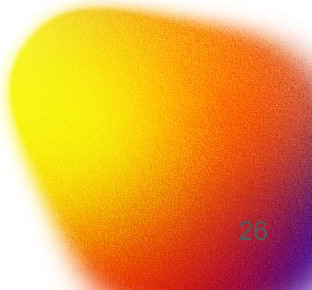
2. Grand societal structures cause inequity in physics

- Inequity is in the K-12 system.
- [socioeconomic]class dynamics are to blame
- Historical racism and sexism explains it all; it'll go away when the old guard retire
- Choices and attitudes around parenting

3. My inaction is justified

- Inaction is justified when sexism and racism are not noticed
- Acting would create negative consequences worse than the racism and sexism itself.
- Inaction is justified when one does not know what to do.

Imagining More Equitable Futures



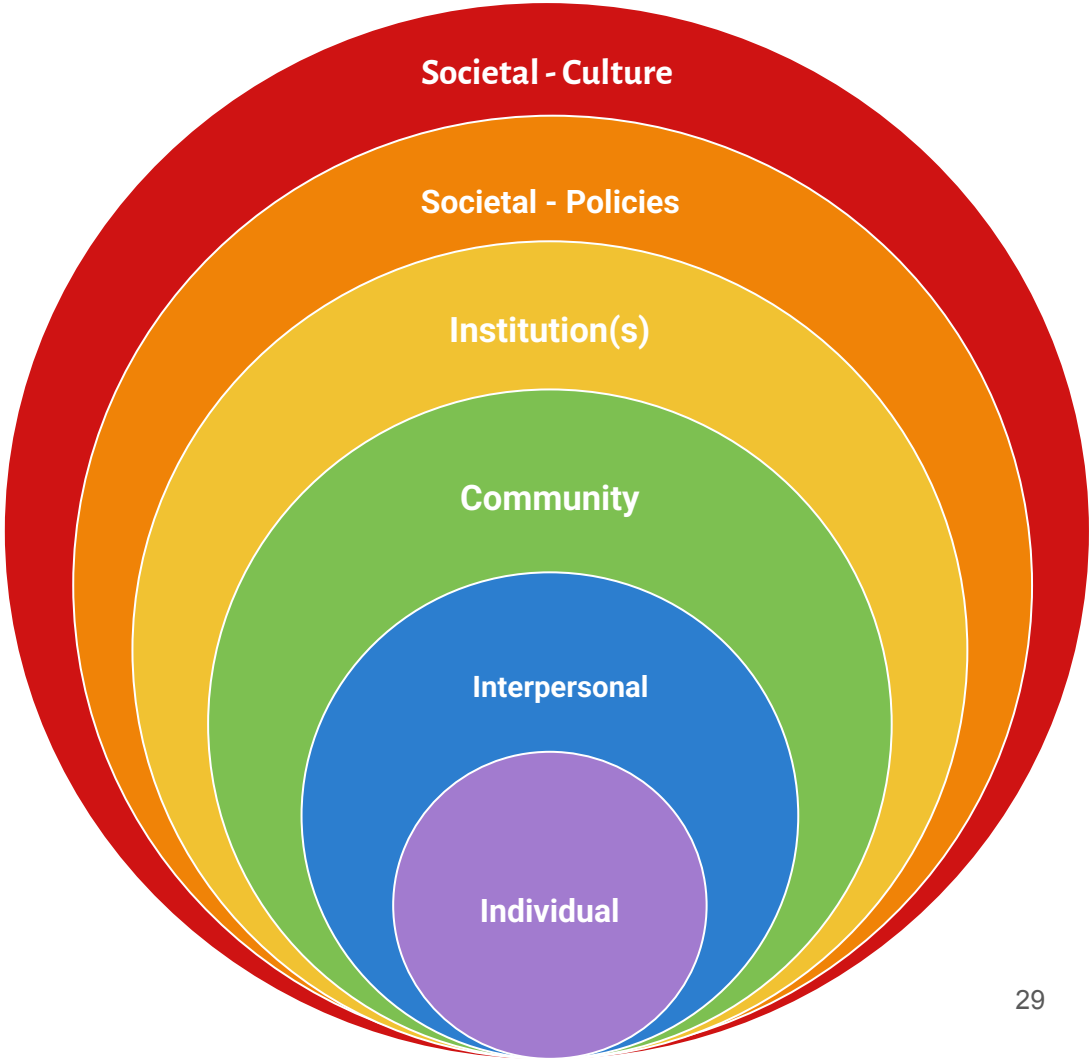
Rather than focusing on recruiting more people from marginalized groups, we must first work towards making our departments and institutions safer and more inclusive.

And that responsibility belongs to all of us

But it can be hard to know where to start and what you can have an impact on

A useful way to conceptualize how we can effect change is by thinking about our

Spheres of Influence



Activity #3: Imagining more equitable futures

- Split into groups of 2-3
- Prompts:
  - **What does a more equitable Physics environment look like to you?**
  - How do we get there?
- Focus on one thing you'd like to change you would like to see as grads and that is within your sphere of influence. Identify actions you could take to make that happen ("little justices")
- Groups will be asked to brainstorm on paper. This can be a bullet-point list, concept-map, a diagram, or anything that works for you.
- We'll discuss as many as we can.

Meaningful EDI Statements (according to NSERC)

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- What barriers exist in my institution, region, field of research, etc., and what practice am I proposing to reduce those barriers and create inclusion?
- How will this practice be carried out in detail and specific to my research environment? Include a timeline if appropriate.
- Why is the initiative that I am proposing appropriate to my research?

Assignment: Individual Reflection

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- Reflection is an important part of doing equity work and thinking about equity
- Possible prompts:
  - What are you taking away from today's session?
  - What was new? What wasn't? What was missing?
  - You can also just talk about how you feel about what we talked about
- These are meant to be:
  - Short! 150-200 words
  - Personal: I want to hear what you think about this, not the academic arguments
- Due date: Friday, Nov. 7, 11:59 pm ET

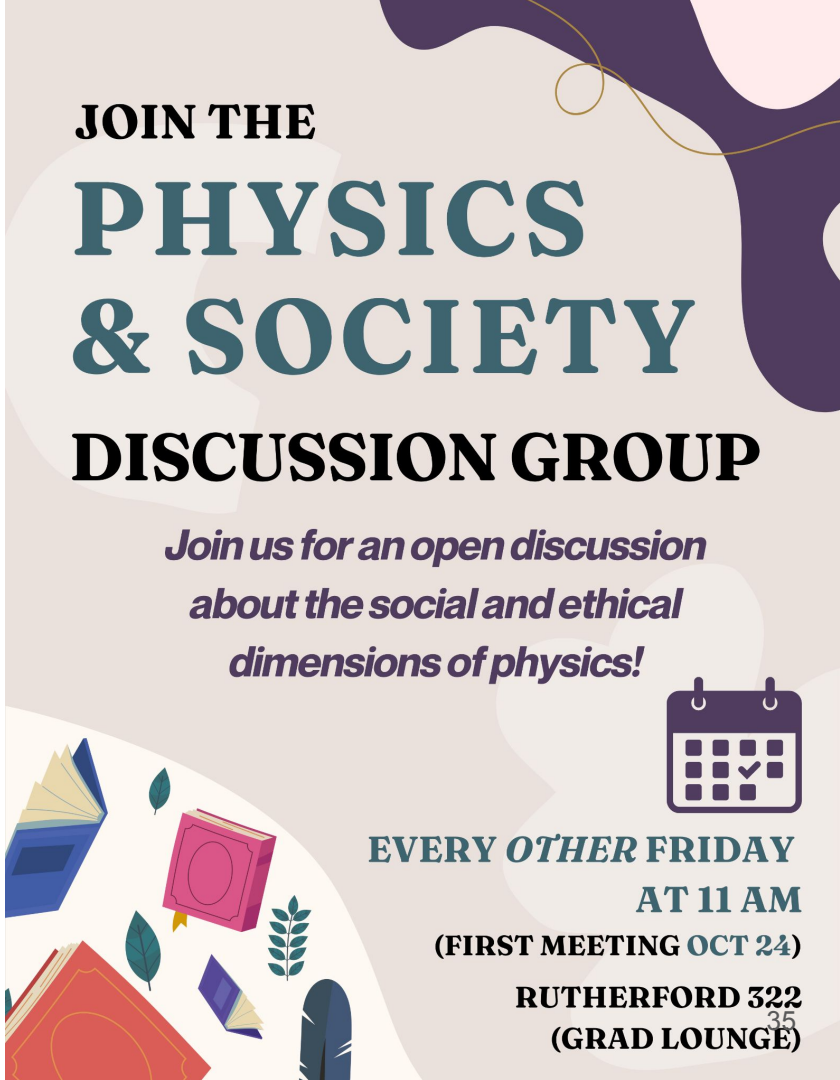
Other information

Physics & Society Discussion Group

When: every other Friday, 11am - 12pm

(This term: Nov. 7, Nov 21, Dec. 5)

Where: Grad Lounge (Rutherford 322)



Contact Info

If you have any questions, please don't hesitate to reach out to!

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