

Early Career Groups in HEP

Fernanda Psihas

Outline

High-level overview of early career organizations

- Why early career issues and orgs matter
- Accomplishments and contributions of EC orgs
- Barriers to EC orgs
- What you can do as a senior collaborator

****For my methodology see backup**

Empowering EC community enables us to do good science

Outline

High-level overview of early career organizations

- Why early career issues and or
- Accomplishments and or
- Barriers to EC orgs
- What you can do as a senior

****For my methodology see backup**

****Nomenclature**

- Typically students and postdocs as well as people with ~equivalent career status, with some exceptions
- YOUNG (in your career, not your age)
EARLY CAREER

Empowering EC community enables us to do good science

Why prioritize EC interests ?

- Science is a **creative** endeavor
- Science requires **innovation**
- Science is a **choice** and environment matters to that choice
- Mentors in the making
- Talent retention
- Promotes the life-cycle of the experiments
- Educating STEM leaders

New since the FY 2022 FOA: New Merit Criterion

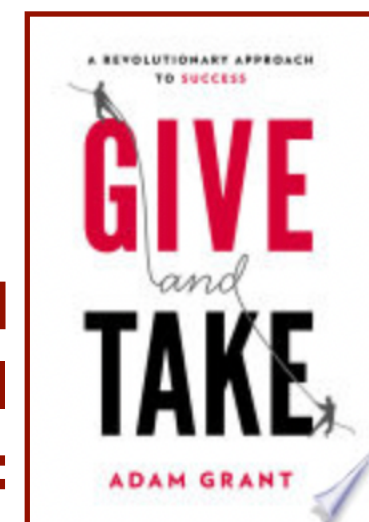
▶ A new merit criterion has been added for proposal evaluation:

Quality and Efficacy of Recruitment and Mentoring Plan

- ▶ What is the past performance of the investigator(s) for mentoring and advancing career opportunities of students and other early-stage personnel in their research team?
- ▶ Does the proposed plan to recruit and retain students and early-stage investigators provide sufficient mentorship, either towards completion of a degree or advancing their career?
- ▶ Are any plans proposed for recruiting additional scientific and/or technical personnel including new senior staff, students, and postdocs reasonable, justified, and appropriate?
- ▶ Is the proposed plan likely to lead to satisfactory outcomes and an advancement in career opportunities for students and other early-stage personnel?
- ▶ Does the proposed plan by the team help ensure a diverse, equitable, and inclusive research environment?

Research has shown people more productive when they are **happy**, have **social support**, are **free to pursue creativity**, empowered **help others**, **ask questions***

***Research-based
organizational
psychology:**



What EC Orgs do

Community

Social Events
Online communities
T-shirt contests
Social media presence
Community-building activities
Journal clubs
- Motivational speakers
Mental health ed & resources
Harassment Ed & resources
Collaboration challenges

Onboarding

Software tutorials
Hackathons/other organized challenges
Resources to meet other EC colleagues
Local events highlighting cultures & international holidays
Onboarding to local community (i.e. living at lab)

Representation

Representation of EC groups in decision-making bodies
Advocate for EDI issues
Advocate (sometimes start efforts) for climate surveys
Contribute (sometimes spearhead) development of Codes of Conduct
Raise awareness for issues of harassment

**These
already exist!**

**These should be
institutionalized!**

Example: Onboarding

Onboarding

A new international student arrives at the lab...

Transportation, getting integrated, making friends, even getting groceries is very different from home

Finds friends with common interests through EC organized party highlighting their culture!

Buys a car easily & finds new hobbies through mailing lists & interest groups organized through EC orgs
(FSPA/fnalgrad/YOUNG@CERN)

Example: Harassment Policies

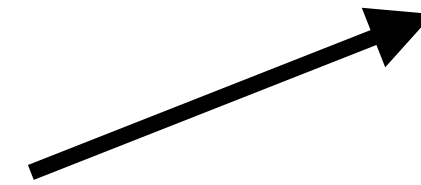
Funding agency
anti-harassment

DOE/SC DEI policy on harassment: <https://science.osti.gov/SW-DEI/DOE-Diversity-Equity-and-Inclusion-Policies/Harassment>
NSF policy on harassment ("Important Notice No. 144"): <https://www.nsf.gov/pubs/issuances/in144.pdf>

Instance of
harassment



Gets
reported



PI applies
for funding



Funding agency
confirms history
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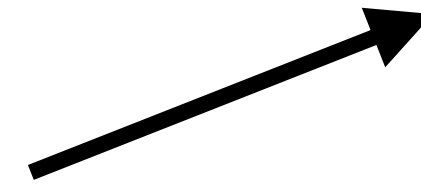
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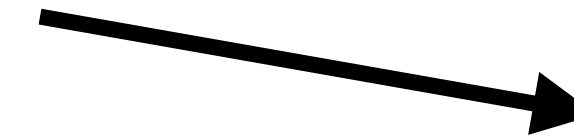
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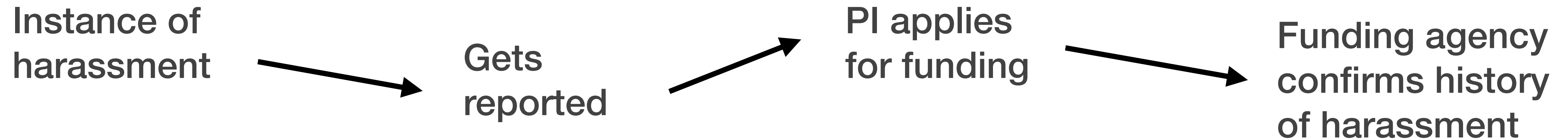
TO THE PI'S
INSTITUTION

BY THE PI'S
INSTITUTION

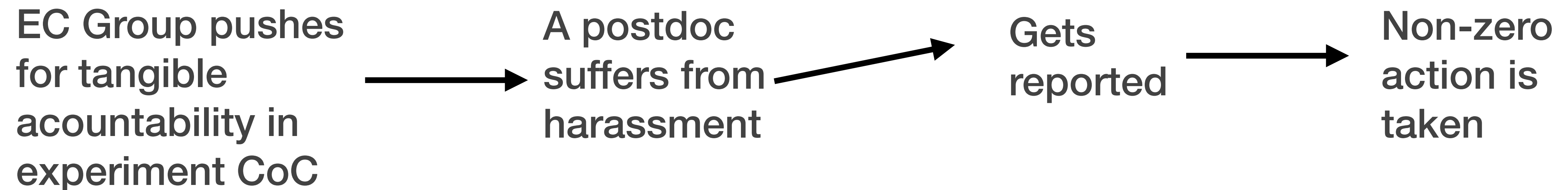
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Resources to meet other EC
community members
Local events highlighting
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holidays
Onboarding social events
community (i.e. living at lab)

Representation

Representation of EC groups
in decision-making bodies
Advocate for EC issues
Advocate (sometimes start
petitions, conduct surveys)
Contribute (sometimes
spearhead) development of
Codes of Conduct
Advocate for harassment
prevention

**EC Orgs fill holes in our community &
show us where we need to do better**

*Increase our potential for discovery
of new areas of improvement*

**These
already exist!**

**These should be
institutionalized!**

Barriers



Lack of sustainability

Institutional memory

Pushback from leadership

Support from mentors

Competition vs collaboration

Lack of recognition

Self-doubt / impostor syndrome etc.

Stress from marginalization,
harassment, lack of job security, etc.

Representation

Representation Mad Libs

A student
or postdoc is invited to a committee charged with Authorship rules

Representation Mad Libs

Gandalf is invited to a committee charged with _____



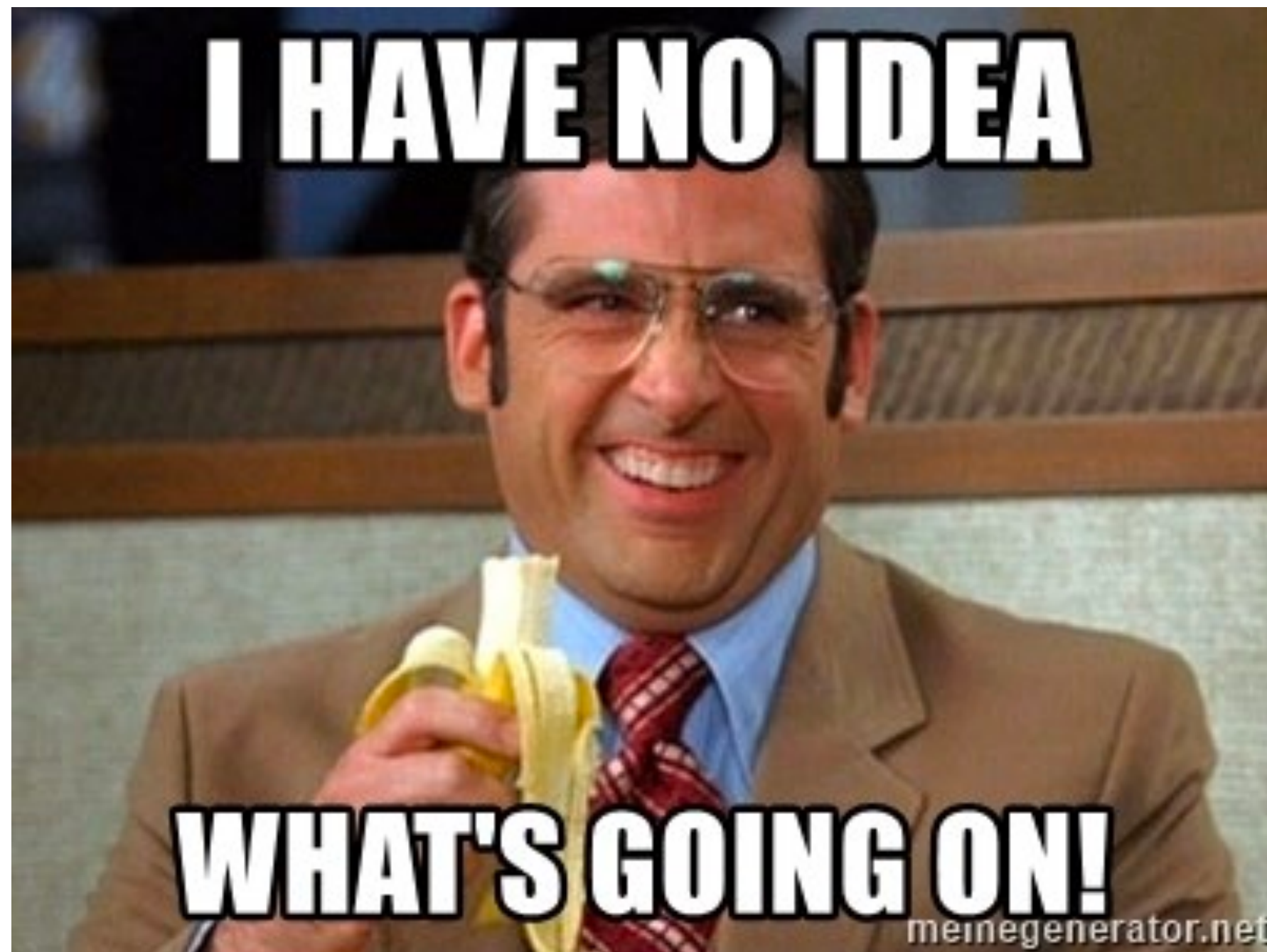
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Gandalf is invited to a committee charged with software design



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Representation Mad Libs

Gandalf is invited to a committee charged with software design



- mandate
- limitations
- community
- jargon



He doesn't understand all the details, ask questions out of context, makes suggestions outside the purview, sits quietly in the corner....

Representation Mad Libs

Gandalf is invited to a committee charged with software design

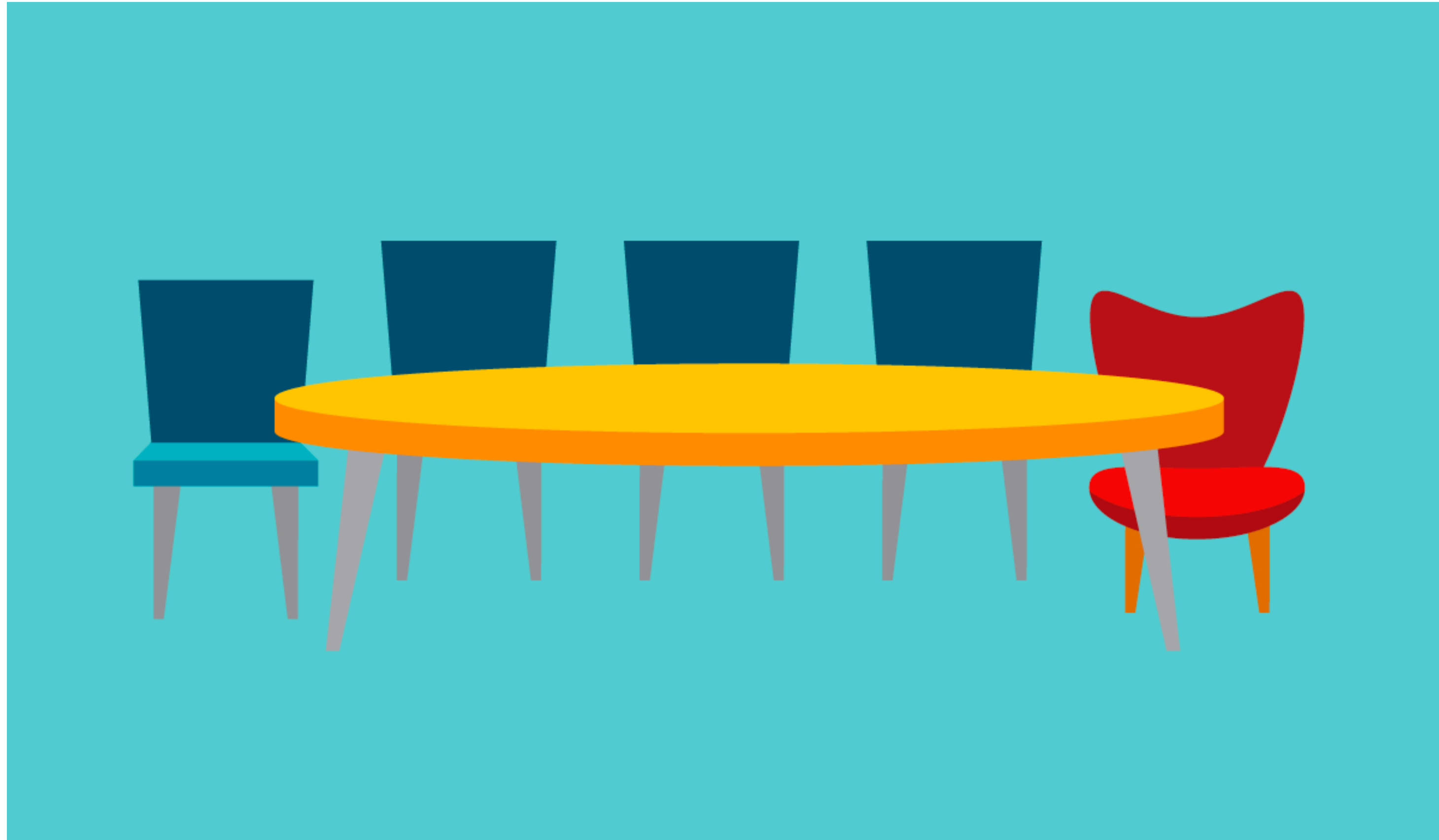


- mandate
- limitations
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- jargon



CONTRIBUTION requires a sense of
PURPOSE, UNDERSTANDING, & BELONGING

What makes a real seat at the table?



Equal voice

Equal footing

Real onboarding

TOKENIZATION IS NOT REPRESENTATION

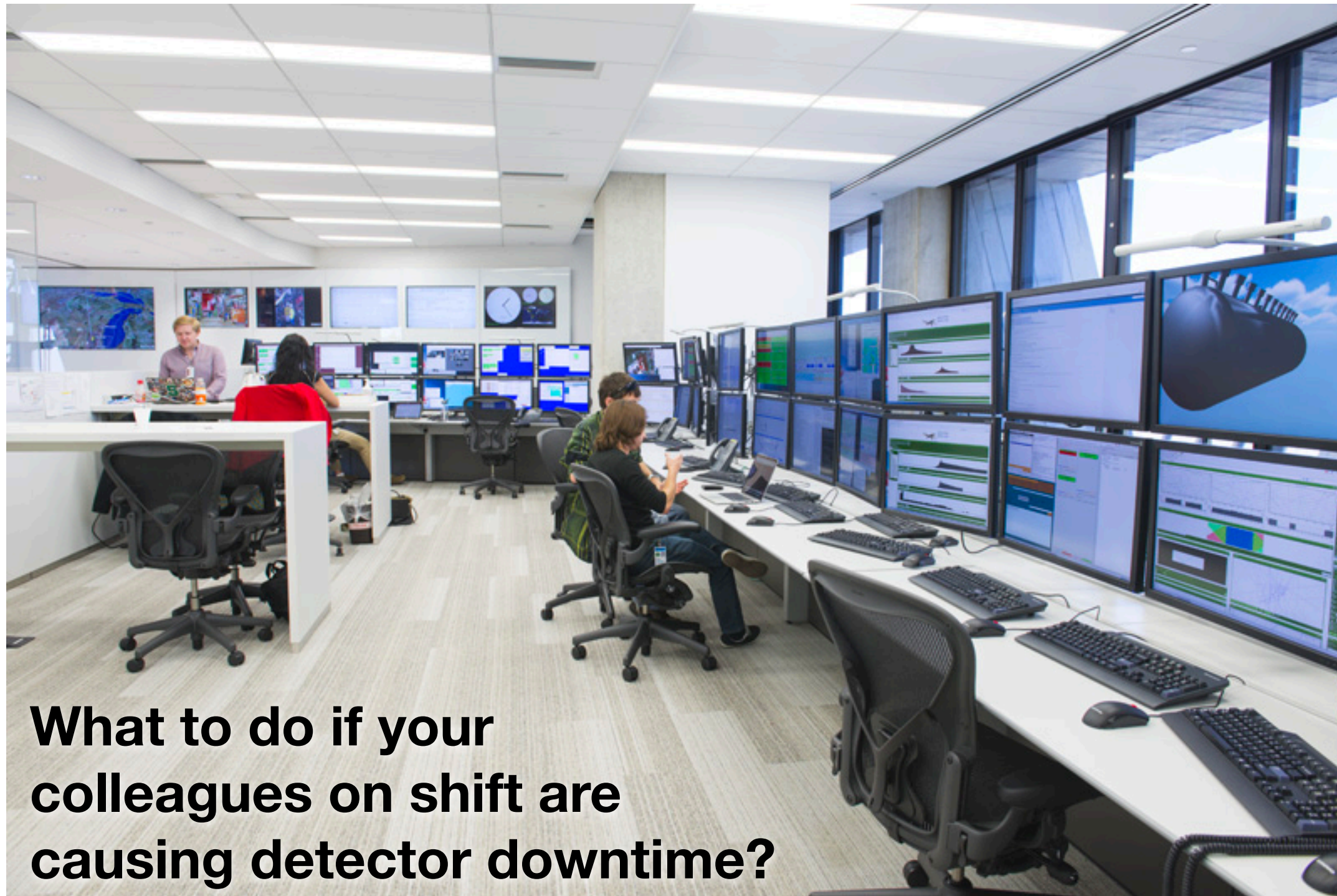
Whose job is it to enable contributions

A student or postdoc is invited to a committee charged with

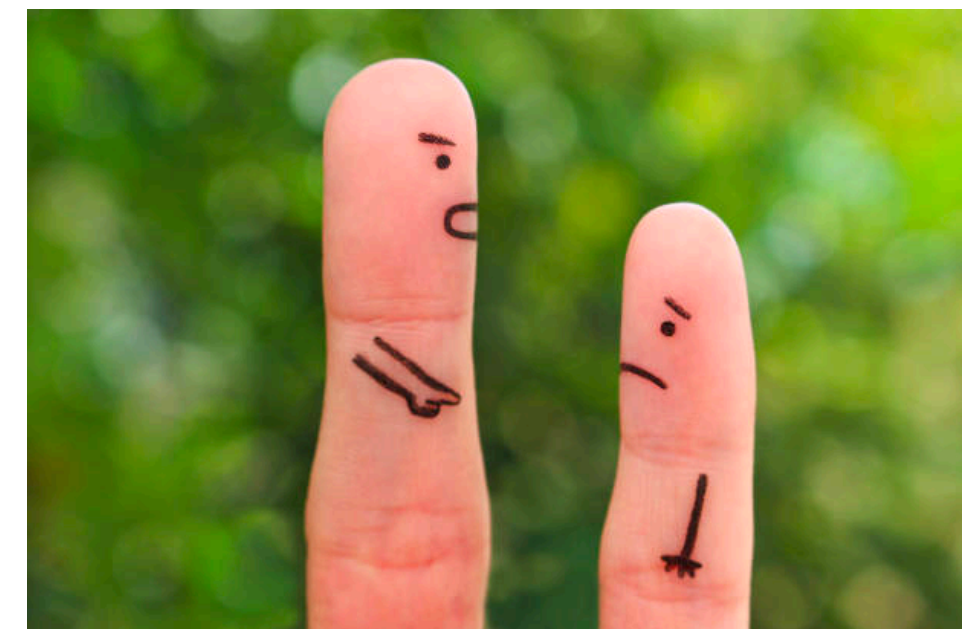
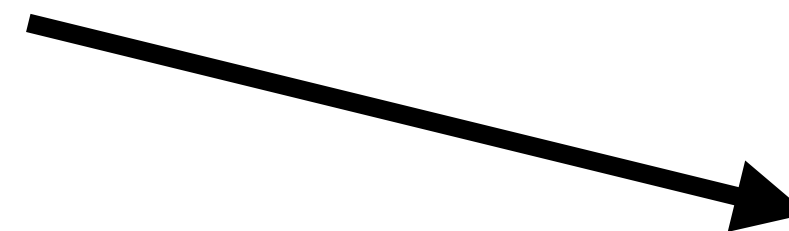
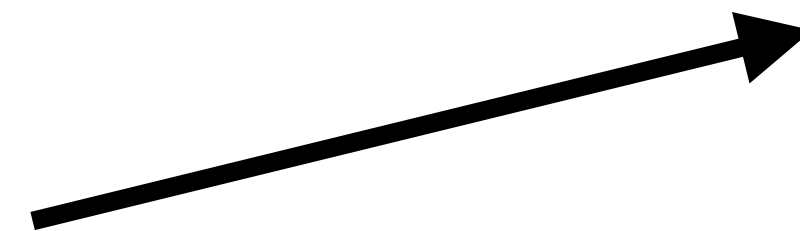
Authorship rules

A senior PI is invited to a committee charged with

DEI policies



What to do if your colleagues on shift are causing detector downtime?



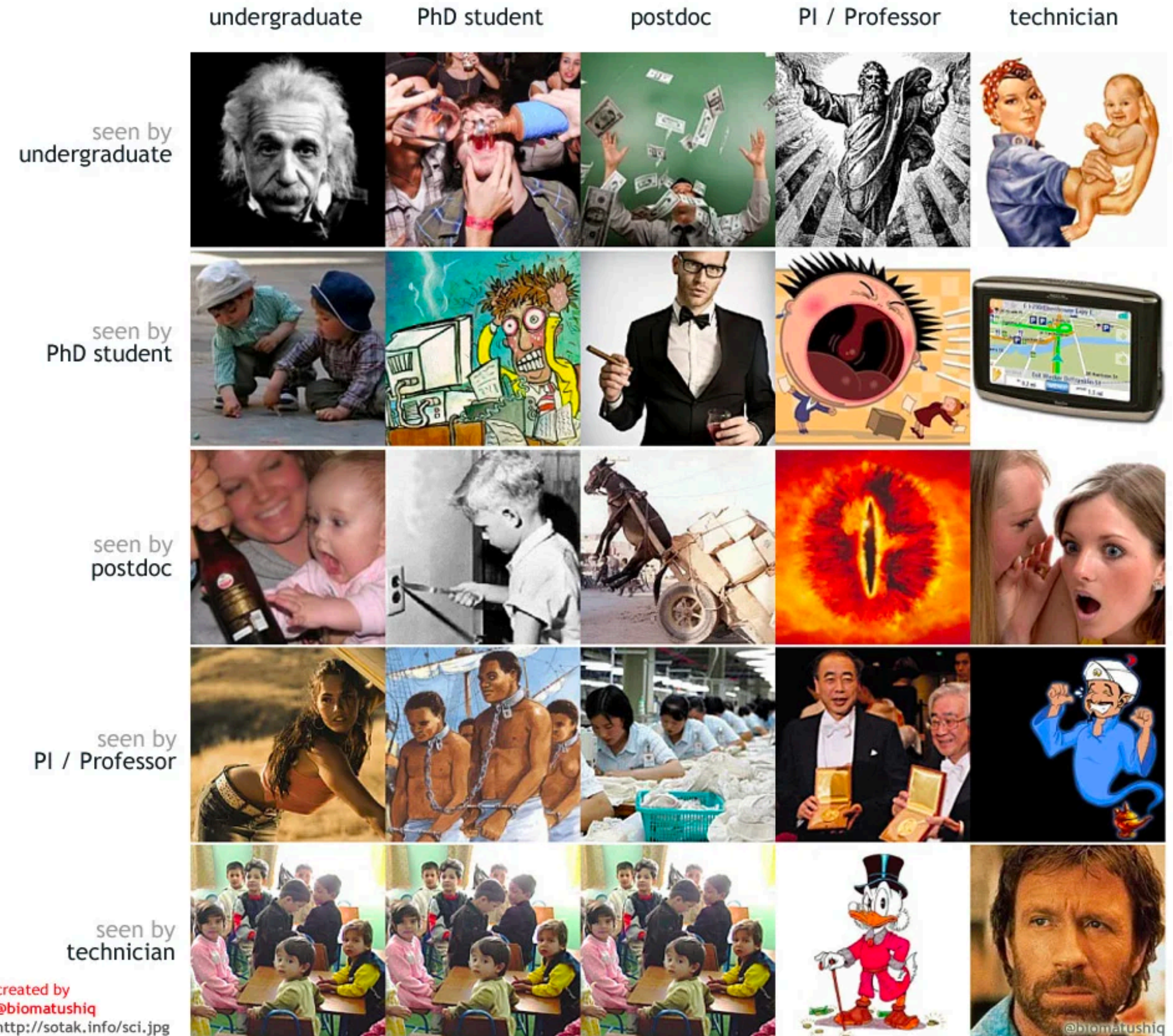
Barriers: Perception

How people in science see each other

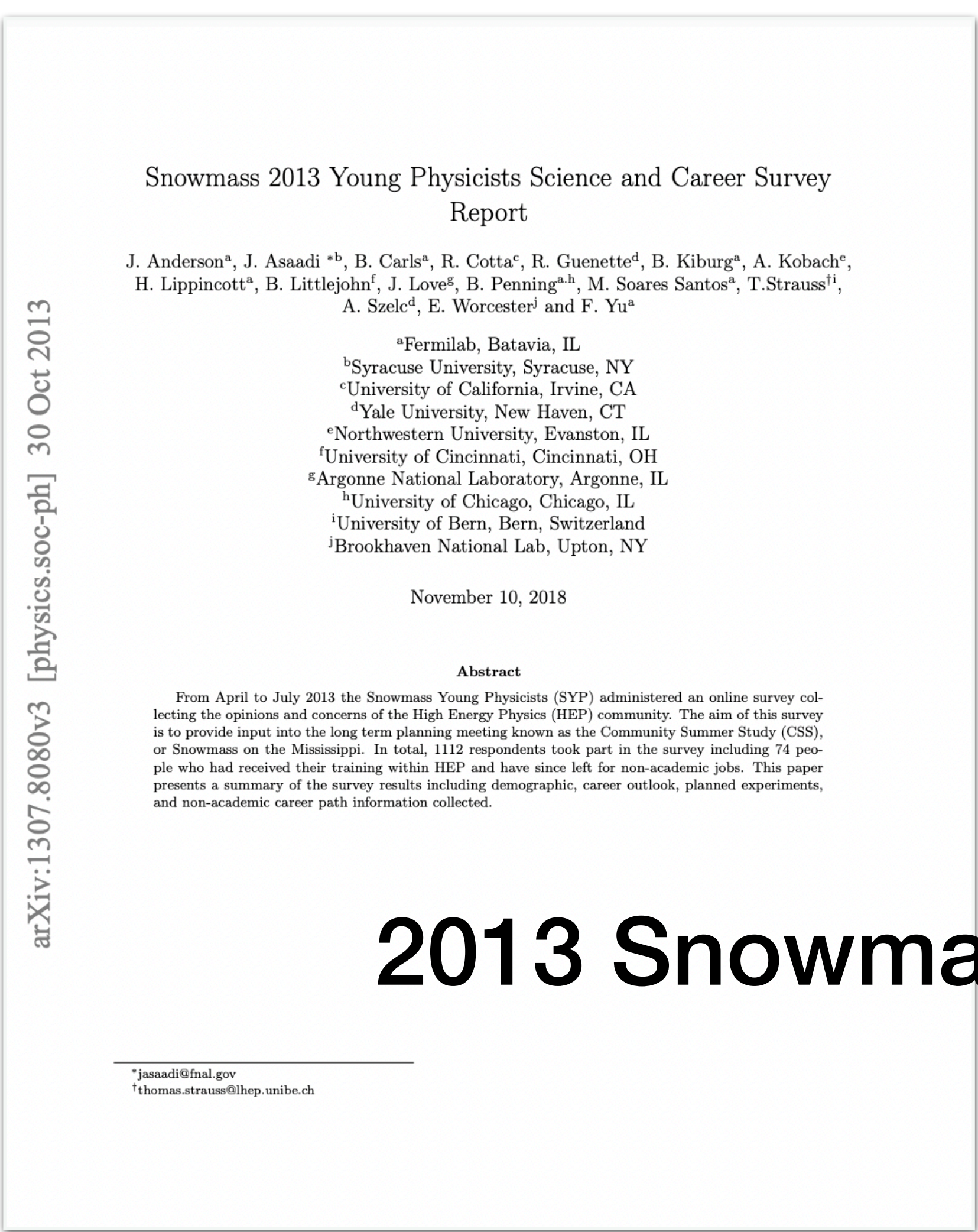
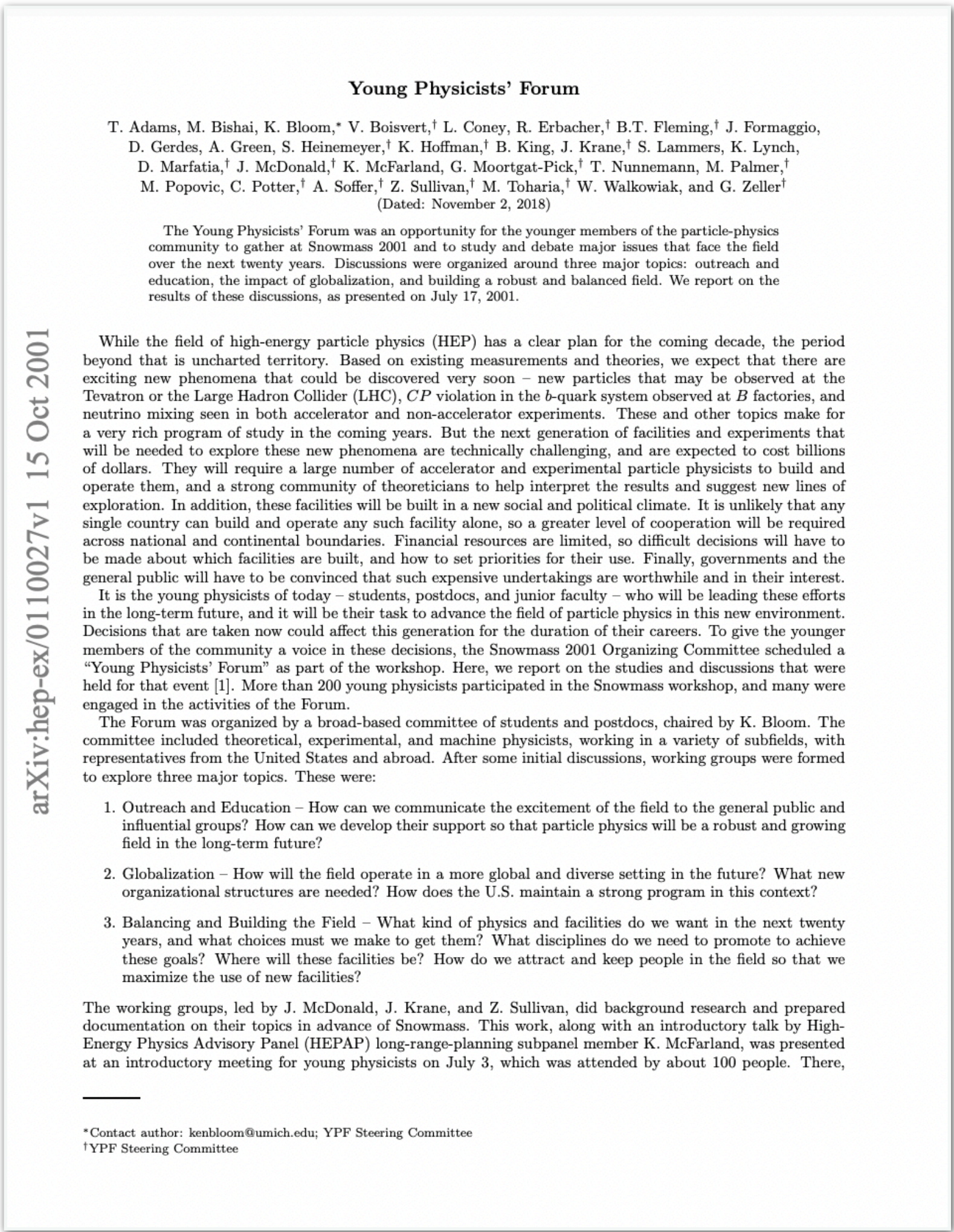
How we see others when they:

- Speak up
- Interrupt you
- Take the lead
- Ask for changes
- Give you constructive comments
- Ask you a question about what you just said

- Join or lead EC efforts



Is this really about the science?



2013 Snowmass Young

2001 Young Physicist Forum

It REALLY is about the science

Snowmass 2013 Young Physicists Science and Career Survey Report

J. Anderson^a, J. Asaadi ^{*b}, B. Carls^a, R. Cotta^c, R. Guenette^d, B. Kiburg^a, A. Kobach^e,
H. Lippincott^a, B. Littlejohn^f, J. Love^g, B. Penning^{a,h}, M. Soares Santos^a, T. Strauss^{†i},
A. Szelc^d, E. Worcester^j and F. Yu^a

110027v1 15 Oct 2001

T. Adams, M. E.
D. Gerdes, A.
D. Marfatia
M. Popovic

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community
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education,
results of t

While the field o
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neutrino mixing see
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will be needed to c
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exploration. In addi

single country can build and operate any such facility alone, so a greater level of cooperation will be required
across national and continental boundaries. Financial resources are limited, so difficult decisions will have to
be made about which facilities are built, and how to set priorities for their use. Finally, governments and the
general public will have to be convinced that such expensive undertakings are worthwhile and in their interest.

It is the young physicists of today – students, postdocs, and junior faculty – who will be leading these efforts
in the long-term future, and it will be their task to advance the field of particle physics in this new environment.

3 [physic

NOVEMBER 10, 2018

Abstract

From April to July 2013 the Snowmass Young Physicists (SYP) administered an online survey col-
lecting the opinions and concerns of the High Energy Physics (HEP) community. The aim of this survey

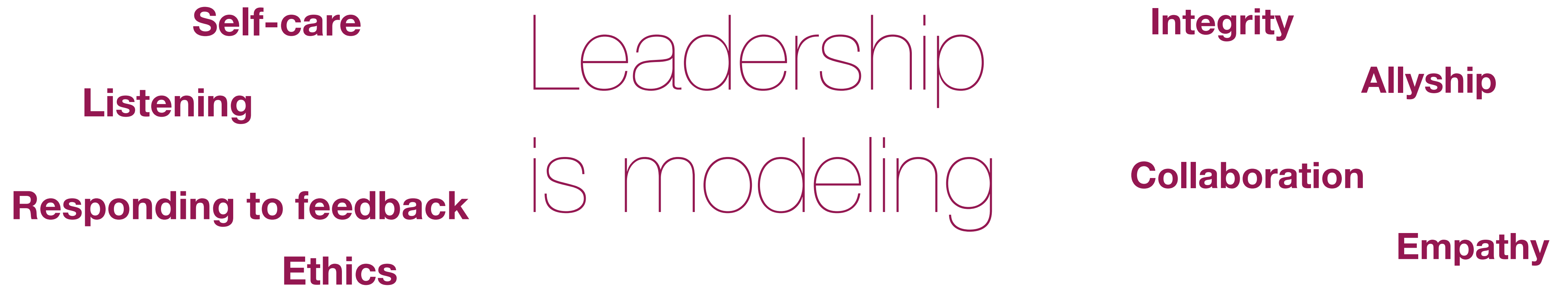
Young Physicists' Forum

T. Adams, M. Bishai, K. Bloom,* V. Boisvert,[†] L. Coney, R. Erbacher,[†] B.T. Fleming,[†] J. Formaggio,
D. Gerdes, A. Green, S. Heinemeyer,[†] K. Hoffman,[†] B. King, J. Krane,[†] S. Lammers, K. Lynch,
D. Marfatia,[†] J. McDonald,[†] K. McFarland, G. Moortgat-Pick,[†] T. Nunnemann, M. Palmer,[†]
M. Popovic, C. Potter,[†] A. Soffer,[†] Z. Sullivan,[†] M. Toharia,[†] W. Walkowiak, and G. Zeller[†]

[†]YPF Steering Committee

How senior colleagues can contribute

- Allyship - lifting others up - prompting others for opinions
- Pick collaborators
- Advocate for change
- Supporting and encouraging EC efforts
- Providing opportunities for EC organizers to highlight their science
- Hiring for technical skills AND leadership skills AND mentoring skills





Particle Physicists Deliver Discovery Science Through Collaboration

Particle physicists seek to discover the fundamental laws of nature by making observations at the largest and smallest distances ever probed by humans. To meet this challenge, particle physicists from the U.S. and around the world join together in groups large and small. These collaborations have been incredibly successful at developing highly complex experiments and delivering world-leading scientific research.



CMS



Muon g-2



SPT-3G

The particle physics community is committed to creating and sustaining a diverse, equitable, and inclusive environment as the foundation for successful scientific collaborations and takes concrete steps to increase awareness, reduce bias, and eliminate inequities.

Building a collaboration

Particle physics collaborations bring together many different partners. Each contributes essential skills and resources that enable scientists to answer fundamental questions about the universe.

Industry

Particle physicists turn to U.S. businesses small and large for specialized parts and equipment. Contracts for construction, fabrication, and services generate jobs for thousands of Americans.

Universities


University researchers inspire, develop, and build experiments that push the frontiers of discovery science and play a vital role in training the next generation of scientists and engineers.

National Laboratories


Scientists and engineers at U.S. National Laboratories develop, build, and operate some of the most advanced equipment of modern science including world-class accelerators and ultra-sensitive detectors.

International Partners


International partners bring their unique expertise to U.S.-hosted experiments and collaborate with U.S. scientists on world-class experiments hosted elsewhere.




Inspiring future experiments.




Operating MicroBooNE.




Building SuperCDMS-SNOlab.



Upgrading ATLAS at the LHC.



Private contributions enabled early work on LSST.



International partners join U.S. scientists on NOvA.

PARTICLE PHYSICISTS Value Diversity and Strive Toward Equity

Particle physicists understand the importance of having a diverse research community and fostering a sense of belonging among its current and future members. We are actively working to improve the climate for groups historically underrepresented in physics. These long needed changes to address systemic inequities are taking place throughout the community and wherever physicists work, including laboratory and university settings.

Community strategy to enable a diverse future

"What drives significant intellectual progress and breakthroughs is having a diverse pool of talents who bring in distinctive skills and perspectives. Through the Snowmass decadal planning process, the U.S. Particle Physics community is strategizing ways to ensure equal access to education and career opportunities for historically marginalized communities."

—Mu-Chun Chen (she/her/hers)
University of California, Irvine



TARGET Program, Fermilab



SAGE-S Summer Camp, SLAC

Building a sense of belonging and a pathway to success

"The Suarez group at Boston University established a mentoring program for women and other underrepresented students to facilitate participation in LHC research starting early in their undergraduate career. We're invested in promoting the mentoring, teaching, and training of students and creating a pipeline for their success through involvement in research. This ensures that we create a STEM workforce that is diverse in experiences, knowledge, and skills."

—Indara Suarez and Daniel Spitzbart
Boston University

Broadening research opportunities

"The Visiting Faculty Program (VFP) fosters collaboration between Fermilab employees and faculty and students from universities that are underrepresented in the research community, including HBCUs and other minority serving institutions. As the VFP lead, my goal is to bring awareness to this DOE-sponsored program so that more faculty and students can strengthen their research competitiveness and bring innovation to Fermilab, their universities, and the DOE mission areas."

—Kathrine Laureto
Fermilab

Building inclusive environments

"The increased awareness of diversity and equity issues is translating into action in particle physics collaborations and university physics departments. Large collaborations have Codes of Conduct and strive for diversity when assigning management positions. University physics departments increasingly consider diversity and inclusion a core value in teaching and research. Target of opportunity programs and improvements in candidate evaluation are making hiring and admissions more equitable, leading to increased diversity in faculty and students."

—Meenakshi Narain, Brown University

Expanding graduate education opportunities

"As an undergraduate student, I had to balance a full-time job and class, which left little time to gain adequate research experience. I was accepted at Cal State Long Beach through the APS Bridge Program, where I received outstanding mentorship and guidance both in academics and professional development. After earning a masters degree and a PhD, I am now a postdoctoral fellow continuing my work at the frontier of high energy physics research and computing."

—Daniel Diaz, UC San Diego



WHO

WE

Work with

Highlight

FUND

Hire

Promote

Socialize with

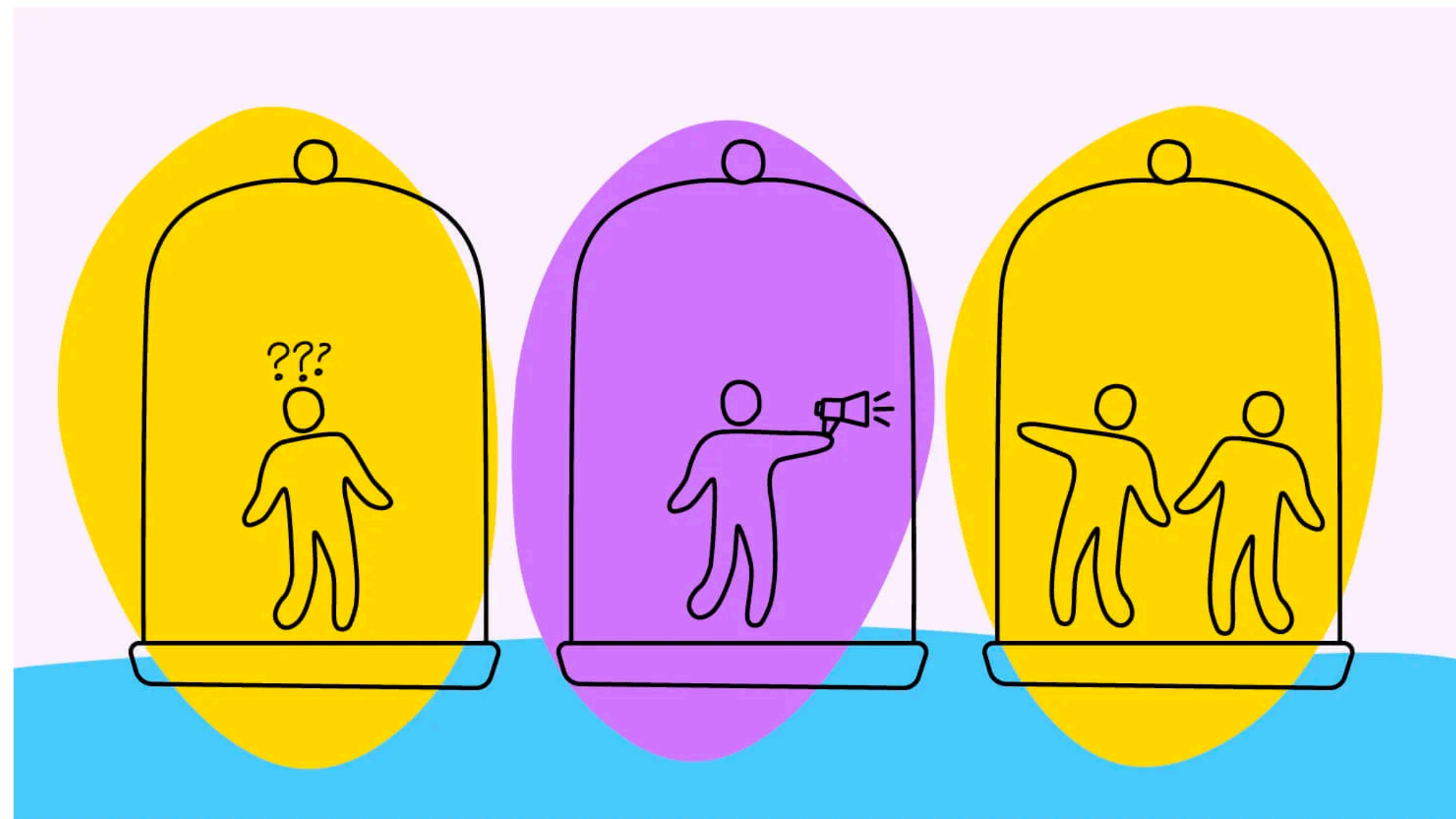
REFLECTS

OUR

VALUES

A note about siloing

- Some of the separation between senior & EC is about true issues of diversity, representation, etc.
- As we become more aware of the effect of power dynamics, uniting the community might require new and more deliberate efforts



Everyone has the power to engage others and make them feel like they belong & are appreciated.

Us Versus Them: Social Identity Shapes Neural Responses to Intergroup Competition and Harm

Mina Cikara, Matthew M. Botvinick, Susan T. Fiske

First Published January 26, 2011 | Research Article | [Find in PubMed](#)

<https://doi.org/10.1177/0956797610397667>

Thank you!

A note on how this talk came together ...

GOAL: Present a global landscape of early career organizations

Online resources

Interview chats with early career colleagues & past snowmass early career colleagues

GOAL: Present the value of the efforts avoiding bias or comparative statements subfields

Avoid naming efforts or present collaborations as doing more or less than one-another

Avoid identifying information of people and efforts

GOAL: Compile opinions & observations of others

Talk to as MANY people as possible... from outside my subfield/bias phase space

Ask open-ended questions to get real opinions as unbiased as possible

Only discuss topics and opinions that you hear repeatedly or where there is consensus

Caveat: My experience with EC orgs & EC representation is on Young NOvA, SBN Young, Fermilab

If you spent time talking to me, connected me to others, sent me resources, etc. THANK YOU!

THANK YOU especially to those who are senior or had talks & obligations they set aside to help me prepare this talk.

If you think something should be added here please let me know.