

2022 Physics and Astronomy SEA Change Annual Report

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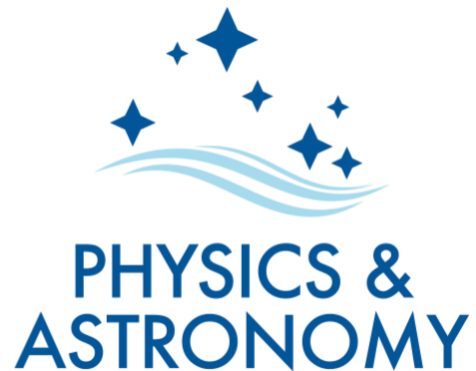


Table of Contents

INTRODUCTION.....	3
PHYSICS AND ASTRONOMY SEA CHANGE COMMITTEE (PASCC).....	3
PASCC ACTIVITIES AND LOGISTICS.....	4
Subcommittees.....	4
Application and Awards Subcommittee.....	4
Implementation Subcommittee.....	4
Sustainability Subcommittee.....	5
DEI Collective and Collective Impact Workshop.....	5
Concerns around DEI the National and State Level.....	5
Staffing.....	5
PILOT COHORTS	6
Cohort 1.....	6
Cohort 2.....	7
EXTERNAL EVALUATION.....	7
WORK WITH AAAS.....	7
ONLINE ENGAGEMENT FOR THE BROADER COMMUNITY	8
Webinar Series.....	8
Social Media and Web Presence	9
DISSEMINATION	9
Publications	9
Presentations and Conferences.....	9
SUMMARY.....	10

Introduction

This public report serves as a summary of the activities the Physics and Astronomy (P/A) SEA Change pilot engaged in during 2022. Like the 2021 report, the 2022 report is informed by the Physics and Astronomy SEA Change Committee (PASCC) meeting notes and documentation and observations made by project manager Dr. Alexis Knaub. The PASCC chair, Dr. Beth Cunningham, also provided edits and feedback on this report. The internal report, which this public report is based on, serves as a reflection tool for the PASCC. The intended audience for this public report is those who are interested in our activities, both stakeholders in physics and astronomy as well as those interested in how a departmental SEA Change pilot program is shaping up.

The Covid-19 pandemic continues, though many activities are returning to in-person. That context means that the PASCC can consider in-person activities and imagine things that were not possible in 2020 or 2021. However, there is much to be said about other contextual elements in the US that jeopardize and impede the work. Equity, diversity, and inclusion is under attack through state level laws- some which may become nationalized. Affirmative action is being challenged in the Supreme Court. These matters influenced the writing of this report, though it is still valuable to imagine what efforts can be done period even if such efforts may be threatened or need to be scaled back in the future.

Physics and Astronomy SEA Change Committee (PASCC)

Beth Cunningham (AAPT), Chair for the PASCC

Alexis Knaub (AAPT), Project Manager for the Physics and Astronomy SEA Change Pilot

American Association of Physics Teachers (AAPT)

Robert Hilborn, AAPT
David Marasco, Foothill College

American Astronomical Society (AAS)

Stella Kafka, Am. Meteorological Soc.
Karen Masters, Haverford

American Institute of Physics (AIP)

Rachel Ivie, AIP (guest)
Jovonni Spinner, AIP
Arlene Modeste Knowles, AIP

American Physical Society (APS)

Erika Brown, APS
Monica Plisch, APS

American Vacuum Society (AVS)

Talat Rahman, Univ. Central Fl.

Council on Undergraduate Research (CUR)- Physics and Astronomy

Carol Hood, Cal. State Univ.- San Bernardino

National Society of Black Physicists (NSBP)

Stephon Alexander, Brown Univ.
Stephen Roberson, Parson Corp.

National Society of Hispanic Physicists (NSHP)

Juan Burciaga, Colorado College

Optica (formerly OSA)

Marcia Lesky, Optica

Society of Physics Students (SPS)

Brad Conrad, SPS
Jim Borgardt, Juniata College

In 2022, the charter, which serves as a guiding document for the P/A SEA Change Committee, was updated to reflect the AAAS use of “STEMM” rather than “STEM” and to use more gender inclusive language.

PASCC Activities and Logistics

The PASCC meet monthly to discuss a variety of matters, including voting on whether to adopt various plans created by the 3 subcommittees from 2022 listed below. PASCC members are encouraged but not required to serve a subcommittee to not only share the workload but to leverage the experiences of the group to create the best structures possible. The project manager, Knaub, works with each subcommittee.

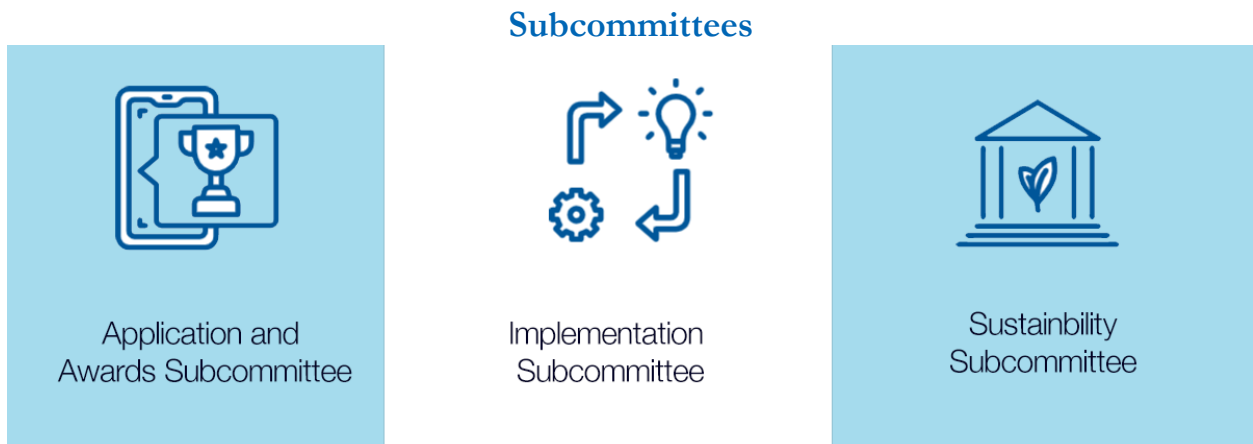


Figure 1: The three P/A SEA Change subcommittees depicted in graphical format. First is the application and awards subcommittee, second is the implementation subcommittee, and third is the sustainability subcommittee

Application and Awards Subcommittee

Members: Juan Burciaga, Brad Conrad, Rachel Ivie, and Bob Hilborn

Previously, this subcommittee created the process for reviewing applications. In 2022, they advised the formation of cohort 2, to ensure that the application process is inclusive and fair to a variety of departments. They also worked to create a slate of potential reviewers in anticipation of applications. In 2023, PASCC will vote on the review panel plans and the reviewers.

Implementation Subcommittee

Members: Juan Burciaga, Brad Conrad, Bob Hilborn, and Carol Hood

This subcommittee was tasked to ensure that the awarded departments make a good-faith effort to complete the steps of their 5-year action plans. The goal was to be supportive, not punitive. This subcommittee created a plan to ensure that the PASCC can support awarded departments. The PASCC agreed via consensus that the implementation plan will be used for the pilot.

Sustainability Subcommittee

Members: Brad Conrad, Bob Hilborn, Stella Kafka, Arlene Modeste Knowles, and Monica Plisch

Although this subcommittee has not engaged in much work this year, their prior efforts have been instrumental in engaging with AAAS. The budget that this subcommittee proposed was used by AAAS is seeking out additional funds from NSF.

DEI Collective and Collective Impact Workshop

Last year, Cunningham received from funding the AIP Venture Partnership to explore how AIP Federation professional societies can best work together around DEI projects and programs that currently exist as well as explore new ventures together. This work came from some of our efforts in P/A SEA Change, where we find that departments may be confused about the different efforts, and that the Federation could work together better to ensure departmental members are not overwhelmed with programs and that the Federation is best serving physics and astronomy departments. Knaub was hired as the project manager for this effort in March 2022.

P/A SEA Change has engaged with the DEI Collective work through a four-hour virtual workshop on collaboration, specifically the Collective Impact approach, facilitated by Junious Williams on 4 November 2022. P/A SEA Change attended with those working on TEAM-UP Together; we note that there is considerable overlap of people in both efforts. One of the goals of this workshop was to determine whether Collective Impact was a viable option for the DEI projects and programs in the Federation. As a result of this workshop, the PASCC is engaging in reflection on our collaboration approach. Although the PASCC has been collaborating productively as indicated through designing the pilot and creating a foundation for a longer-term program, there are likely areas for improvement.

Concerns around DEI the National and State Level

The PASCC has discussed legal challenges that will severely hinder DEI efforts; while these challenges go beyond P/A SEA Change, it does impact P/A SEA Change. These include legal challenges at the state-level (e.g., STOP WOKE in Florida) and at the national level (e.g., affirmative action); there is also concern that state-level actions may materialize in other states or impact national laws. We anticipate that these legal efforts will limit what departments can do and whether they can make meaningful change, as well as creating a hostile climate for DEI efforts. There are ongoing discussions to create efforts to address these matters.

Staffing

Knaub is the only employee focused on P/A SEA Change. She is half-time. She runs the entire pilot program and interfaces with the pilot departments, the PASCC, and AAAS SEA Change. She also engages with the broader physics and astronomy community through the P/A SEA Change webinar series and non-SEA Change professional endeavors.

Volunteers continue to play a key role in this pilot, as seen by the subcommittees. They are creating the program and providing a sounding board for the PASCC's actions.

Pilot Cohorts

P/A SEA Change remains the only departmental SEA Change, though the biomedical sciences are piloting in some fashion. There are two pilot cohorts. Cohort 2 originally had 2a and 2b, due to different orientation dates, but are one cohort 2. Currently, the identities of the departments are confidential in case they do not receive a Bronze award.

Although the department are making progress on the self-assessment, larger contextual factors are impeding what they can do in terms of working on the self-assessment. The pandemic is still on-going, despite many pandemic measures rolling back. Some of the departments are experiencing changes at their institution or within their departments that mean they have less time devote to their SEA Change endeavors.

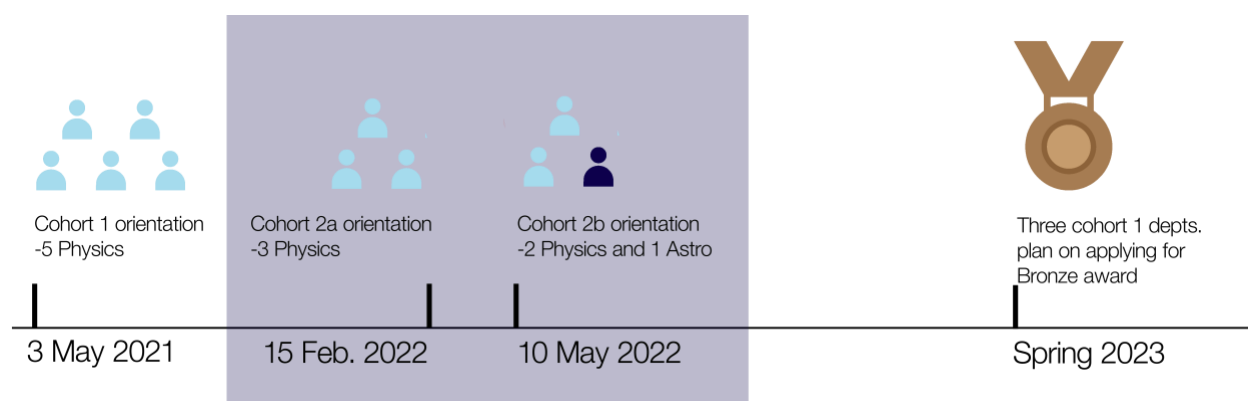


Figure 2: Timeline of the cohort activities

Cohort 1

The 5 departments in cohort 1 went through an orientation on 3 May 2021, five departments attended an orientation for the pilot. The departments in this cohort include:

- Public, Minority-Serving Institution (MSI), bachelor's granting department in the Midwest
- Private, R1, doctoral granting department in the Northeast
- Public, R1, doctoral granting department in the Southeast
- Public, regional, master's granting department in the Southeast
- Private, liberal arts college in the Northeast

Two departments are gearing up to apply by the end of the 2022-2023 academic year. Issues beyond their control have delayed some of their plans. Taking their time to create a robust application is perfectly fine, as the PASC and AAAS SEA Changes wants the departments truly reflect and spend considerable time on the action plan.

The departments continue to meetup approximately every other month.

Cohort 2

We primarily focused on institutions west of the Mississippi River for recruitment. Two departments voiced interested in participating in P/A SEA Change, and the PASCSC agreed to invite them. One lesson learned from cohort 1 was that we perhaps waited too long and should have held orientation earlier despite not having a complete cohort. To address that issue, we held orientation for cohort 2a on 15 February 2022. Cohort 2a consisted of:

- Public, R1, doctoral granting department in the Northeast
- Public, R1, doctoral granting department in the West
- Public, MSI, master's granting department in the West

Cohort 2b was onboarded on 10 May 2022 and consists of:

- Private, HBCU, bachelor's granting department in the South
- Public, R1, doctoral granting astronomy department in the Midwest
- Public, master's granting department in the Midwest

Cohorts 2a and 2b officially were combined 28 July 2022. One of the departments in cohort 2 has had a shift in the point of contact. The departments in cohort 2 appear to be making progress.

External Evaluation

Linda Strubbe, a newer evaluator, was hired to conduct a modest external evaluation around the cohort experiences. She has completed focus groups with cohorts 1 and 2a. Some of the primary themes of the focus group are to be expected: dedication to DEI work, faculty bandwidth, changes to the department/team meaning less time to work on this, and challenges with accessing institutional data from offices like institutional research. One viable suggest was to share tips and lessons from cohort 1 with cohort 2 (e.g., how to complete the work). Two of the departments gearing up to submit applications will be meeting with cohort 2 in February to get feedback and to provide advice.

Work with AAAS

P/A SEA Change continues to work collaboratively with AAAS SEA Change staff (Erin Conn, Shirley Malcom, and Beth Ruedi). AAAS SEA Change invited Knaub to one of the *Community Conversations* that are informal discussions re. DEI topics. Knaub also participates in the AAAS Port of Call, which is an online community.

Ruedi and Knaub meet regularly to update one another as well find solutions to challenges. While there are some commonalities between the institutional and departmental endeavors, departments are different. Namely, the resources and smaller population pose unique challenges. These meetings are useful for devising creative solutions or recognizing some of the potential limitations regarding what is viable.

Online Engagement for the Broader Community

The 2022 online activities are the same from 2021. The online engagement is to familiarize the broader physics and astronomy community with P/A SEA Change through supporting other efforts in the AIP Federation and other organizations as well as providing resources to support physics and astronomy educators.

Webinar Series

The webinar series continues to highlight promising practices to the broader physics and astronomy educator community; inviting speakers to the webinar series also introduces them to the P/A SEA Change if they had not heard of it. “Promising practices” are those that have some research or evaluation that indicates they are indeed promising.



Figure 3: An infographic displaying the number of webinars, speakers, registered attendees, and views as of 24 January 2023.

There was a total of 176 unique attendees and 204 total. Thus far, the 6 webinars have been 458 times as of 24 January 2022. Attendees have said favorable things, and one attendee said that they sought one of the speakers out for collaboration.

The 2022 webinars were:

- **Considering Our Diverse Students: Intersectionality of Disability and Indigeneity.** Presenter: Kiriko Takahashi (Univ. of Hawaii)
- **Transforming the preparation of physics GTAs .** Presenter: Dr. Emily Alicea-Muñoz (Georgia Tech)
- **Beyond instructional development: An exploration of using formal pedagogy training to benefit perceived quality of life and sense of community in graduate students.** Presenter: Dr. Matthew Mahavongtrakul & Dr. Ashley Hooper (UC- Irvine)
- **"Dear Educators...." Communicating Physics through Letters.** Presenter: Charles Ramey (Texas State University)
- **The Societies Consortium on Sexual Harassment in STEMM—Working Across Sectors in STEMM to Advance Inclusion and Equity.** Presenters (all are a part of The Societies Consortium on Sexual Harassment in STEMM): Jamie Lewis Keith and Lisa Battalia (EducationCounsel); Yvette Seger (FASEB)

- **Designing course activities, policies, and infrastructure to support early college (physics) success at the University of Illinois.** Presenters: Eric Kuo and Muxin Zhang (University of Illinois at Urbana Champaign)

Social Media and Web Presence

The P/A SEA Change [website](#) provides static information, such as the committee members and the charter. For dynamic context, P/A SEA Change is on [Twitter](#) and [Facebook](#). Facebook is a slightly less static presence while Twitter is much more active. Knaub is also in many Slack Groups, some more related to DEI than others; however, she believes this helps the physics and astronomy community know she exists and meets astronomers and physicists where they are, which may not be in spaces focused on DEI.

Dissemination

Publications

There were no publications of any kind this year. One of the cohort 1 pilot departments is participating in an institution-wide feature that will highlight P/A SEA Change. In 2023, we will likely have some awardees and a better sense of the program's future. Figuring out what will be fruitful news article publications will be important.

We should also consider what research we want to do that will become peer-reviewed publications. Knaub is a Physics Education Research (PER) and STEM education scholar, meaning this work could become part of her P/A SEA Change work.

Presentations and Conferences

The 2022 year was the first year of in-person presentations as the pandemic prevented many in-person events in previous years.

Some presentation explicitly focused on P/A SEA Change. These include:

- Knaub (filling in for Cunningham) at the Chesapeake Section of the AAPT Spring Hybrid Meeting in April 2022.
- Stella Kafka and Beth Cunningham presented on P/A SEA Change at the APS April 2022 meeting in a session organized by Knaub. The session was framed around joint programmatic efforts for physics and astronomy departments. The other two speakers are Bob Hilborn, who spoke on the Partnership for the Integration of Computation in Undergraduate Physics (PICUP), revitalizing the undergrad physics curriculum, and New Faculty Workshop; and Joel Corbo, who spoke on the EP3 Guide and Department Action Team Leadership Institute (DALI).

In other talks, Knaub included P/A SEA Change in a variety of ways. These include:

- Knaub at the virtual Symposium on Horizons in Astronomy and Physics Education (SHAPE) held by Laurie McNeill for North Carolina educators in April 2022. This talk highlighted DEI efforts and resources for physics and astronomy educators.
- Knaub at the NSBP Conference focused on DEI efforts in the AIP Federation and included P/A SEA Change in November 2022.

- Knaub at the joint APS Eastern Great Lakes Section (EGLS)- AAPT Michigan Section meeting in the fall as part of the APS Career Mentoring Fellows program. Because the talk includes information about Knaub, P/A SEA Change was indeed brought up.

Additionally, conferences provide an opportunity to have individual conversations regarding P/A SEA Change. As with many cases, these meetings and discussions can happen over Zoom but the in-person element can strengthen ties and make it easier to make such connections.

Summary

Most of the 2021 activities continued through 2022. P/A SEA Change continued to support cohort 1 and added cohort 2. The PASCC could not test the procedures and policies for application review and awarding departments yet. However, it is encouraging that departments persist, and more departments are expressing interest. The pilot engagement suggests that the SEA Change process is useful and is worthy of being sustained so that more departments could participate. Beyond the departments working on the self-assessment, our broader engagement suggests that there is ample interest in DEI work. Individuals still attend the webinars and talks on P/A SEA Change.

There is a lot of celebrate, even with the amount of work and challenges ahead. The PASCC and the departments participating in the pilot have continued to show up and do the work that is needed to create this pilot during extraordinary times, limited bandwidth, and for most people, for free. The dedication to improving physics and astronomy by taking a chance and devoting considerable time is commendable.