Workplace climate for LGBT+ physicists: A view from students and professional physicists

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LGBT+ persons in science, technology, engineering, and mathematics have a small growing body of literature addressing their experiences and workplace concerns. This study offers workplace climate analysis of 324 survey respondents in the field of physics. The findings indicate that when building a climate model to predict for consideration to leave and outness, a positive workplace climate was a stronger predictor than a negative workplace climate or experiences of exclusionary behavior. This points to the importance of moving beyond workplace climates that are simply neutral, but to ones that are inclusive and welcoming for LGBT+ physicists. This is the final paper in a series of three.

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I. INTRODUCTION

The field of physics education research had dedicated significant literature to the exploration of gender diversity and support of women [1–24]. These studies have looked at the quantitative differences between men and women students in introductory physics classes [14,15], the qualitative experiences of women in physics and astronomy [2,5,6,25], sexual harassment [2,7], physics identity [11,20], and more. Far fewer articles have examined issues of race [26–31]. However, few articles beyond this paper series have specifically looked at the experiences of LGBT+ (defined below) physicists, whom are often marginalized in many spaces both private and professional [32–34]. This article offers one of the first looks at the lives and experiences of LGBT+ physicists by using data collected as part of the *ad hoc* committee on LGBT+ physicists for the American Physical Society in 2015. This *ad hoc* committee grew out of a grassroots organization, LGBT+ Physicists, founded by Dr. Elena Long in 2010 [32,35].

This article is part of a three-part series exploring the research results, in-depth, of the *American Physical Society* LGBT+ *Climate in Physics Survey.* The three articles outline the (i) overall results of the survey and [36] (ii) the qualitative responses of participants about their experiences and observations of exclusionary behavior [34] and (iii) the workplace climate experiences of participants, and its impact on outness and consideration to leave. Some of the tables and methodology presented in this paper have been previously published in the *European Journal of Physics* [34] and *Physical Review PER* [36]. The qualitative response paper and the overall survey results paper have already been published [34,36].

A. Terminology

Before presenting this work, we first define the terms used. We acknowledge that many people prefer to self-describe their gender and/or sexual orientation, and the terms we present here may not be fully representative, however, we have tried to be as inclusive as possible:

1	LGBT+	A common acronym that refers to gender and sexual minorities broadly, but specifically encodes Lesbian, Gay, Bisexual, and Transgender people.
2	Transgender	A person who identifies their gender different from the sex that was assigned to them at birth. For example, a person who was assigned male at birth but identifies as a women is a transgender woman.
3	Cisgender	People who identify their gender with the same sex they were assigned at birth.
4	Out	A person who openly discloses their identity in the LGBT+ community.

(Table continued)

(Continued)

5	Gender and sexual minorities	A term meant to encompass all persons who identify with genders and sexual orientations not considered to be in the majority of the population.
6	Race	Socially constructed category of people based on physical traits which are seen as important (i.e., skin color).
7	Ethnicity	Refers to shared history and culture (i.e., language, traditions, religion).
8	Climate	Attitudes, behaviors, and standards of faculty, staff, and students about access, inclusion, and respect for individuals [37].

B. LGBT+ scientists

The published academic work on the experiences and careers of LGBT+ scientists is sparse and fairly new. Four studies are the main antecedents to the present work: A qualitative study on the experiences of LGBT+ STEM faculty [38], a quantitative study on LGB STEM faculty [39], a quantitative study on LGBT+ scientists in federal agencies [33], and the climate report on LGBT+ physicists from which data for this work are taken [32]. The climate report data will be discussed in the methodology section. Below we will review the results from the other three milestone papers and more.

One of the first articles to address LGBT+ issues in STEM was published as recently as 2009 [38]. The authors performed in-depth interviews with 14 lesbian and gay STEM faculty members and found a mixed climate experienced by faculty, with some discussing the consequences of overt hostility and others exploring more subtle pressures. These pressures were both negative and positive. The negative pressures were the overall feeling that they must not be out about their sexual identity in order to protect themselves, their experiences of being ignored, and feeling of discomfort. For other faculty, they felt a pressure to support LGBT+ students and junior peers in ways that their non-LGBT+ colleagues were not asked to.

The second article, published in 2014, looked at the quantitative responses of LGBQ (lesbian, gay, bisexual, and queer) STEM faculty by doing a secondary analysis of a national dataset [39,40]. This article demonstrated that faculty who were out were less likely to be comfortable on campus and that faculty who either experienced or observed harassing behavior were significantly more likely to consider leaving their institutions.

The most recent article was published in 2017 and focused on the experiences of the science workforce in federal agencies [33]. This study used a dataset containing 37 219 responses from federal scientists to compare the experience of LGBT+ respondents ($N = 1042$) to the non-LGBT+ respondents. Their findings indicate that LGBT+ respondents overall reported a more negative workplace. This reality was true regardless of the age of the respondent or their status as a supervisor. More recently this research was extended to include non-STEM employees federal agencies [41], which found similar trends of workplace discrimination and intent to leave.

In addition to the above studies there are similar findings about the experiences of students in STEM spaces. A four-year quantitative study on retention [42] found that despite being more likely to participate in undergraduate research, LGBQ students in STEM were 9.5% less likely than heterosexual peers to complete a degree in STEM. Qualitatively, there are studies which suggest that LGBT+ STEM students [43,44] are pressured to compartmentalize various aspects of their identities due to the uniquely heteronormative STEM culture which ostensibly values “apoliticism” and “meritocracy” above all else.

Together, these studies suggest that LGBT+ scientists may experience a differential workplace and classroom climate compared to their peers. Being out caused significant challenges for some participants in these studies whether coming from negative treatment or the assumption that they must conduct more service work, and these negative pressures may lead to a lack of retention in undergraduate studies as well as the workplace.

The data presented here builds on these efforts by exploring the workplace climate experiences of LGBT+ physicists, including faculty, private sector employees, and students in physics. Further work has also explored this topic, including a LGBT+ STEM workplace climate article which demonstrated that many LGBT+ STEM persons are out in their personal, but not professional lives [45].

C. Theoretical framework

To understand the workplace climate for LGBT+ physicists, this climate can be represented as a multidimensional construct for ease of measurement [37,46]. Two dimensions that appear in widely used climate models include the behavioral dimension, or the context, frequency, and quality of interactions among members of an organization, and the psychological dimension, or how members of an organization evaluate the nature of the environment, intergroup relations, discrimination, and conflict as a result of those interactions [46]. Most climate instruments “blend” these two dimensions to assess the frequency of interactions either observed or experienced by LGBT+ organizational members as contributing to a hostile climate. The climate for LGBT+ communities is an important factor in understanding why members of LGBT+ communities may decide to leave an organization altogether regardless of their performance within their roles [37].

One unique aspect of the climate experienced by LGBT+ communities is the manner in which interactions and experiences among organizational members contribute to a "silencing" or suppression of the expression of LGBT+ identity [47]. Through these experiences and interactions, LGBT+ people are pressured to "cover" and monitor their expression of sexual orientation and/or gender identity, meaning they conform their behavior and appearance to heterosexist and cissexist norms [48], or even "pass" to appear heterosexual to avoid stigmatization in the workplace. These pressures can be as overt as threats of retaliation for revealing homophobia and transphobia within the organization, but are more often covert, like microaggressions, such as when an a colleague reacts with disinterest or discomfort in response to an LGBT+ member sharing information about their personal life or even disclosing their LGBT+ identity [47].

The silence around LGBT+ identities and experiences within organizational settings creates a negative space that implicitly communicates the limits of LGBT+ people's participation in these settings. The heterosexism and cissexism experienced in STEM workplaces and academic settings is usually observed through silence around LGBT+ identities, typically grounded in a claim that sexual orientation and gender identity are irrelevant to STEM knowledge and work [38,49]. Although physics workplaces should eradicate open hostility against LGBT+ people, the mere absence of conflict is not a sign that the climate experienced by LGBT+ people in physics is inclusive either. This article explores this idea further through survey data collected on the experiences of LGBT+ people in physics. The methodology used in the survey data collection and this analysis are described next.

II. METHODOLOGY

The American Physical Society (APS) *ad hoc* Committee on LGBT+ Physicists (C-LGBT+) conducted this research as part of their work. The committee was charged to

> *The committee (*C-LGBT+*) will advise the APS on the current status of* LGBT+ *issues in physics, provide recommendations for greater inclusion, and engage physicists in laying the foundation for a more inclusive physics community. More specifically, the committee will investigate* LGBT+ *representation in physics, assess the educational and professional climate in physics, recommend changes in policies and practices that impact* LGBT+ *physicists, and address other issues that affect inclusion.*

The research used a survey instrument distributed globally with both fixed and open-ended questions. The survey methodology is described here.

A. Survey

The survey instrument was designed using both the literature and expertise of the C-LGBT+ committee [38,39,50,51] to assess (1) demographics, (2) climate experiences, and (3) consideration to leave. Section (1) was created to look for salient information about the participants such as their gender identity, sexual orientation, race, level of outness, and more. Phrasing of the questions was designed around previous LGBT+ climate research in higher education and the expertise of the committee members [3]. Section (2) was created to understand the personal climate experiences of participants on campus, in the classroom, and in their workplaces. This included a workplace climate questionnaire designed by Liddle *et al.* [51] (Likert scale strongly agree to strongly disagree), which incorporated items measuring interactions with others (behavioral dimension), perceptions of the LGBT+ climate (psychological dimension) [46], and pressure to suppress expression of LGBT+ identity (covering) [48]. A question was asked halfway through the survey for participants to select a particular answer to ensure their focus through an attention check.

B. Participants

The Institutional Review Board at the University of Maryland approved the survey, which included a consent question at the start of the survey. The survey was distributed online through snowball sampling. Snowball sampling is a method that asks identified participants to send the survey out to persons they know to meet the criteria to take the survey. Since LGBT+ people cannot be readily identified across physics, such methodology allowed the greatest reach. In order to begin this snowball process the survey was sent out to the LGBT+ Physicists list-serv of ally and LGBT+ physicists. It was also posted on Facebook in various diversity in physics groups and LGBT+ STEM groups. The survey was further distributed to various physics list-servs. In all, 324 usable responses were received. The details of these participants can be found in the Appendix in Tables VI through X.

C. Analysis

The survey results were cleaned and analyzed using the SPSS Statistical Software Package [52]. Statistical methods for analysis include descriptive statistics, chi square analysis, t tests, principal component analysis, and binary logistic regression [53]. This analysis will focus on the demographics of participants, their consideration to leave their campus or workplace, experience and observation of exclusionary behavior, and their workplace climate responses.

III. RESULTS

A. Demographics and outnesss

A full review of the demographics can be found in the Appendix. Salient to this paper are the workplace status of the participants (Table IX). The majority of the sample reported working in academia (84%) with fewer respondents working in the government (6%) or industry (5%). In

TABLE I. Outness to co-workers.

	N	%
Out	108	33%
Out to most	58	18%
Out to some	49	15%
Out to few	49	15%
Not out	47	15%
Missing	13	4%

total 39% of respondents reported being graduate students, 19% reported being undergraduate students, and 22% reported being faculty or post-doctoral scholars. No statistical differences between graduate and undergraduate students were found, so students are analyzed together as one group.

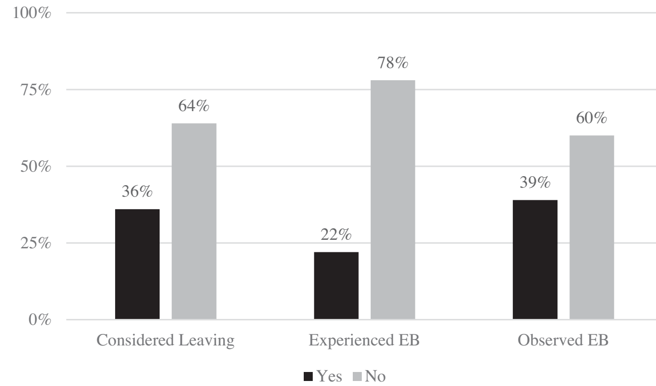

FIG. 1. Consideration to leave, experience, and observation of exclusionary behavior.

TABLE II. Workplace climate questions.

	Strongly agree		Agree		Disagree		Strongly disagree	
	N	%	N	%	N	%	N	%
Behavioral								
LGBT+ employees treated with respect	95	29%	190	59%	32	10%	6	2%
Co-workers as likely to ask nice, interested questions about same-sex relationship as they are about heterosexual relationships	41	13%	136	42%	115	35%	28	9%
Non-LGBT+ employees are comfortable engaging in gay-friendly humor with LGBT+ employees	40	12%	129	40%	126	39%	22	7%
Co-workers make comments that seem to indicate a lack of awareness of LGBT+ issues	68	21%	124	38%	106	33%	25	8%
LGBT+ employees are comfortable talking about their personal lives	38	12%	150	46%	111	34%	23	7%
LGBT+ employees feel free to display pictures of a same-sex partner	36	11%	174	54%	94	29%	17	5%
Psychological								
LGBT+ people consider it a comfortable place to work	42	13%	217	67%	54	17%	7	2%
The atmosphere for LGBT+ employees is oppressive	8	2%	38	12%	165	51%	111	34%
LGBT+ employees feel accepted by co-workers	52	16%	210	65%	53	16%	8	2%
LGBT+ employees fear job loss because of sexual orientation	7	2%	32	10%	168	52%	112	35%
My immediate work group is supportive of LGBT+ co-workers	117	36%	161	50%	37	11%	6	2%
Covering								
LGBT+ employees must be secretive	19	6%	61	19%	183	56%	60	19%
Employees are expected to not act too gay	34	10%	105	32%	133	41%	50	15%
There is pressure for LGBT+ employees to stay closeted	25	8%	75	23%	158	49%	65	20%
Negative experiences								
LGBT+ employees are met with thinly veiled hostility	10	3%	30	9%	168	52%	113	35%
LGBT+ employees are free to be themselves	56	17%	195	60%	60	19%	12	4%
LGBT+ people are less likely to be mentored	12	4%	52	16%	174	54%	78	24%
Overall climate								
Employee LGBT+ identity does not seem to be an issue	62	19%	153	47%	100	31%	7	2%
The company or institution as a whole provides a supportive environment for LGBT+ people	56	17%	190	59%	62	19%	13	4%
The atmosphere for LGBT+ employees is improving	59	18%	232	72%	28	9%	3	1%

Most of the sample were out to at least one co-worker (81%). In total 33% were completely out to their co-workers, 18% were out to most, 15% were out to some, and 15% were out to a few. 15% of the respondents were not out and 4% of respondents' responses were missing. This makes this dataset particularly compelling as it may help reveal factors impacting outness. The outness of participants is shown in Table I.

B. Exclusionary behavior (harassment) and consideration to leave

More than a third of participants (36%) reported considering leaving their institutions in the past year before taking the survey. In this same period 22% reported experiencing and 39% reported observing exclusionary or harassing behavior due to their gender, gender expression, gender identity, sexual orientation, and sexual identity. This is shown in Fig. 1 below.

C. Workplace climate

Participants responded to twenty questions about their workplace climate on a four-point Likert scale of strongly agree to strongly disagree. These questions were answered by all participants including students. They were asked to respond based on their experiences in their workplaces or departments. The responses are provided in Table II. Items in the table are grouped relative to our framework, including items measuring the behavioral and psychological dimensions of climate [46], covering [48], and negative or silencing experiences [47].

Principal component analysis (PCA) was used to reduce the data in Table III. The authors note that in the original Liddle *et al.* article [51] they reduced the questionnaire to one overall factor. However, for our participants the PCA revealed two underlying variables. Oblique (oblimin) rotation was used since the questions were interrelated. A Kaiser-Meyer-Olkin (KMO) score of 0.96 was found to ensure the accuracy of the sample, and the correlations between individual questions were also confirmed through a significant Bartlett's test of sphericity, $\chi^2(190) = 3738$, $p < 0.0001$. Questions were included in individual factors if they had factors loading above 0.4 [53]. The analysis yielded two factors labeled by the researchers as LGBT+ inclusion and LGBT+ exclusion. LGBT+ inclusion brings together items addressing the psychological dimension of climate [46], whereas LGBT+ exclusion addresses silencing of LGBT+ identity expression [47], including covering [48]. Together these factors

TABLE III. Workplace climate questions factor analysis.

	Factor loadings	
	LGBT+ Inclusion	LGBT+ Exclusion
Item		
LGBT+ people consider it a comfortable place to work	0.77	
The atmosphere for LGBT+ employees is improving	0.77	
Non-LGBT+ employees are comfortable engaging in gay-friendly humor with LGBT+ employees	0.76	
Co-workers as likely to ask nice, interested questions about same-sex relationship as they are about heterosexual relationships	0.74	
LGBT+ employees are free to be themselves	0.72	
LGBT+ employees treated with respect	0.72	
The company or institution as a whole provides a supportive environment for LGBT+ people	0.70	
My immediate work group is supportive of LGBT+ co-workers	0.70	
LGBT+ employees are comfortable talking about their personal lives	0.67	
LGBT+ employees feel accepted by co-workers	0.63	
LGBT+ employees feel free to display pictures of a same-sex partner	0.57	
Employee LGBT+ identity does not seem to be an issue	0.42	
LGBT+ employees fear job loss because of sexual orientation		0.91
LGBT+ employees are met with thinly veiled hostility		0.79
LGBT+ employees must be secretive		0.71
There is pressure for LGBT+ employees to stay closeted		0.68
The atmosphere for LGBT+ employees is oppressive		0.65
Employees are expected to not act too gay		0.63
Co-workers make comments that seem to indicate a lack of awareness of LGBT+ issues		0.59
LGBT+ people are less likely to be mentored		0.53
Cronbach's alpha	0.93	0.89
Variance	51.7%	6.2%
KMO	0.96	
Total variance	57.9%	

TABLE IV. Model 1: Climate model for consideration to leave[a].

	B	Standard error	Wald	Sig	Exp(B)
LGBT+ inclusion	−0.55	0.15	14.24	***0.001***	***0.58***
Observation of EB	0.838	0.27	9.49	***0.002***	***2.313***
Student	−0.54	0.27	4.11	***0.043***	***0.58***
Constant	0.133	0.58	0.053	0.82	1.143

[a]Cox and Snell $R^2 = 0.127$, Nagelkerke $R^2 = 0.174$, $N = 294$.

TABLE V. Model II: Climate model for being out[a].

	B	Standard error	Wald	Sig	Exp(B)
LGBT+ inclusion	0.7	0.19	13.23	***0.001***	***2.02***
LGBT+ exclusion	−0.37	0.18	4.44	***0.035***	***0.688***
Student	−0.661	0.27	6.05	***0.014***	***0.52***
Constant	0.133	0.58	0.053	0.82	1.143

[a]Cox and Snell $R^2 = 0.178$, Nagelkerke $R^2 = 0.238$, $N = 290$.

accounted for nearly 58% of the variance in the workplace climate model. These data are shown in Table III.

D. Climate models

The final analysis was the creation of two climate models to understand which factors impacted the respondents' consideration to leave their workplace in the year before taking the survey, and what factors impacted their outness. The factors included in the first model were the climate factors of LGBT+ inclusion and LGBT+ exclusion, experience of exclusionary or harassing behavior, observation of exclusionary or harassing behavior, gender, race, and whether the respondent was a student. In this model three factors emerged as being significant: LGBT+ inclusion, observation of EB, and being a student. The nonsignificant factors were removed from the analysis and a new regression model was created, which is presented below. Respondents who scored higher in the LGBT+ inclusion factor were 1.7 times less likely to consider leaving while participants who had observed exclusionary or harassing behavior were 2.3 times more likely to consider leaving. Students were 1.7 times less likely to consider leaving. These results are shown in Table IV. Participants without complete data were not included in the analysis.

The second model used a binary logistic regression to identify which factors impacted respondents' outness. Outness was collapsed into a binary variable of out and not out. Respondents answering *"Out"* and *"Out to Most"* were labeled as out, all others were labeled as not out. The factors included in the second model were climate factors of LGBT+ inclusion and LGBT+ exclusion, experience of exclusionary or harassing behavior, observation of exclusionary or harassing behavior, race, gender and whether the respondent was a student. In this model three factors emerged as significant, LGBT+ inclusion, observation of EB, LGBT+ exclusion, and status as a student. Respondents who scored higher in LGBT+ inclusion were 2.02 times more likely to be out, those who scored higher in exclusion were 0.688 times less likely to be out, students were 0.52 times less likely to be out. These results are shown in Table V. Participants without complete data were not included in the analysis.

IV. DISCUSSION

Students were 1.9 times more likely to be not out, but 1.7 times less likely to consider leaving. Generally, students have less economic flexibility while partially through a degree program, less power to affect change when they experience bias, and less control over who they interact with as a part of their classes and research. Students may be choosing to be less out as a protective measure to avoid experiencing bias while they finish their degree programs. The qualitative responses to this survey [34] contain several anecdotes of explicit bias or harassment from professors and mentor students or faculty, which may support this. More research is needed to pinpoint the mechanisms of bias which disproportionately affect students and how this may contribute to outness and consideration to leave. This measure of consideration to leave does not necessarily contradict other studies which found that LGBT+ students are less likely to be retained in STEM programs [42,47], as we are comparing the experiences within LGBT+ physicists, not comparing LGBT+ students to cisgender and heterosexual classmates in the same programs.

LGBT+ inclusion, or the experience of inclusionary interactions with others, was the only factor which positively correlated to outness, and it significantly reduced consideration to leave.

While outness is not necessarily a goal unto itself, it can be used as a gauge of comfort and perceptions of safety and inclusion. The presence of LGBT+ inclusion in both climate models demonstrates that being explicitly inclusive is just as important as, if not more important than, the absence of exclusion. Some of the items with the highest factor loadings in LGBT+ inclusion were related to small social interactions like being able to engage in gay-friendly humor or having coworkers ask questions about one's partner. This shows that it is essential to include LGBT+ people in the day-to-day culture of their institutions, not just in specialized inclusive settings. Workplaces can play an important role in creating explicit inclusion by welcoming partners to events, having LGBT+-inclusive healthcare policies, and advocating for LGBT+ people in professional spaces.

However, mitigating bias is not any less important. Observation of explicit bias was still more heavily weighted in consideration to leave than LGBT+ inclusion. While improving the culture of inclusion may mitigate exclusive practices, instances of exclusionary behavior may also counteract the positive effects of institutional supports and interventions when it comes to job retention. This is why it is important that interventions are not just on the policy level, they are on the daily cultural level.

V. CONCLUSION

This study has examined how climate is experienced by LGBT+ physicists and shapes outcomes such as their decision to continue in the field and be out in the workplace. Survey questions from the APS study of LGBT+ physicists, which invited respondents to report experiences and perceptions of climate, were analyzed. The results were found to collapse into two significant factors, corresponding to inclusive and exclusive experiences.

Our central result is that inclusive experiences are no less important than exclusive experiences in shaping participants consideration to remain and be out. One might have anticipated, for example, that individuals who experience EB (or harassment) would consider leaving their institutions at a higher rate and be out at work. What we found, however, is that inclusive experiences appear to affect these outcomes more significantly than either exclusive experiences or experience of EB. In part, this may be because relatively few individuals directly experience EB—noting that those who do are more likely to be members of further marginalized groups—but that all individuals experience climate. Indeed, the observation of EB significantly shapes outcomes, particularly the consideration to leave, as well. Further, LGBT+ people constantly surveil their environments to protect themselves from stigma [54], so observation of exclusionary behavior becomes important information regarding how they evaluate the relative safety of their work environments.

Another important finding is the significance of LGBT+ inclusion relative to LGBT+ exclusion in terms of remaining in a work environment and choosing to be out in that environment. Both of these experiences influence the decision to come out in a nearly equal manner, but only experiencing LGBT+ inclusion predicts a higher likelihood of choosing to remain in a particular work environment. These results suggest that what may be most important in creating a supportive workplace climate in higher education is affirming an LGBT+ person's participation and existence in these spaces. Again, the absence of hostility is not the only factor driving the climate for LGBT+ physicists in the workplace; these results support this assertion that actively cultivating an LGBT+-inclusive work environment has a more profound impact on retaining LGBT+ physicists than only removing exclusive behaviors and practices. This has important ramifications for the design of interventions intended to support LGBT+ scientists: efforts focused solely on mitigating hostile experiences, while highly important, may not improve retention nor encourage individuals to be out at work. What truly needs to happen is "breaking" the silence around LGBT+ issues in physics.

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APPENDIX: DEMOGRAPHICS AND OUTNESS

Below are the data for the demographics and outness of participants.

TABLE VI. Gender.

	N	%
Man	162	50%
Woman	119	37%
GNC	25	8%
Other	11	3%
Missing	7	2%
Trans	37	11%
Intersex	2	1%

TABLE VII. Race[a].

	N	%
African	2	0.6%
African American	6	1.9%
Alaskan Native	1	0.3%
Asian	19	5.9%
Asian American	11	3.4%
SE Asian	2	0.6%
S Asian	7	2.2%
Caribbean/West Indian	2	0.6%
White	267	82.4%
Latino	16	4.9%
Latin American	4	1.2%
Middle Eastern	5	1.5%
Native American Indian	6	1.9%
Pacific Islander/Hawaiian native	2	0.6%

[a]Could select more than one, sums to greater than 324.

TABLE VIII. Sexual orientation.

	N	%
Asexual	15	5%
Bisexual	86	27%
Gay	116	36%
Heterosexual	46	14%
Lesbian	45	14%
Man loving man	10	3%
Pansexual	26	8%
Queer	63	19%
Questioning	8	2%
Woman loving woman	6	2%
Other	15	5%

TABLE IX. Workplace and campus status.

Workplace ($N = 324$)	N	%
Academia	272	84%
Industry	16	5%
Government	19	6%
Other	8	2%
Workplace Status ($N = 324$)	**N**	**%**
Undergraduate Student	62	19%
Graduate Student	126	39%
Post Doc	29	9%
Faculty	42	13%
Staff	9	3%
Administration	2	1%
Research Scientist	17	5%
Technician	5	2%
Engineer	7	2%
Project Manager	3	1%
Other	14	4%
UG Students ($N = 62$)	**N**	**%**
1st year	7	11%
2nd year	8	13%
3rd year	15	24%
4th year	25	40%
Other	7	11%
G Student ($N = 126$)	**N**	**%**
Masters	12	10%
Ph.D.	111	88%
Other	2	2%
Faculty ($N = 42$)	**N**	**%**
Instructor	2	5%
Assistant Professor	10	24%
Associate Professor	12	29%
Professor	15	36%
Visiting Professor	1	2%
Other	2	5%

TABLE X. APS membership and USA relationship.

	Citizen		Work in USA		Identify as a physicist		APS member	
	N	%	N	%	N	%	N	%
Yes	239	74%	254	78%	299	92%	161	50%
No	78	24%	63	19%	15	5%	154	48%
Missing	7	2%	7	2%	10	3%	9	3%

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