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Oh My Stars! The Astronomically Appalling Treatment of Astro and Aero Women

Women have been treated poorly and underrepresented in STEM fields for a very long time. However, even as many fields – including biology and medicine – grow into more diverse communities, others are far behind, including the astro/aero- fields. Most significantly, there are numerous occasions of sexual harassment and assault in the workplace – these inappropriate occurrences lead to fewer women wanting to pursue careers in this field and can interrupt field and lab work as well as influence future participation in this field. Fewer women in the field means fewer female representation and fewer female voices which inhibits progress and innovation on a larger scale – it’s incredibly important to have all sides of the story. High levels of sexual harassment discourage women from continuing to pursue careers in astro/aero-fields. The overwhelming majority of institutions do not aid women and many do not attempt to fix the sexual harassment and assault problem. Studies show that “women are consistently underrepresented on NASA's planetary science spacecraft teams” (Kaplan), their research is cited 10% less often than men (Kaplan), and about 70% of women experienced sexual harassment, most often from their supervisors (*Sexual Harassment*).

The treatment of women in astro/aero-fields is generally inappropriate, rude, and disrespectful – there is blatant gender bias among peers and there are accounts of sexual harassment and assault in the field as well as from supervisors. “If a woman knows something about astronomy, some people assume she must have picked it up from her husband” (Jennings);

while gender stereotypes can be subtle, they continue to create obstacles and are pervasive and deeply rooted in the culture of the amateur astronomer community. This almost unconscious categorization of gender creates an uninviting atmosphere for newcomers and may lead to fewer people, especially young girls, willing to join the astronomical community. This is also pervasive in the professional setting: research done in 2012 at Yale University showed that physicists, chemists, and biologists are more likely to view male scientists more favorably than a woman with the exact same qualifications (Jennings). The culture of inappropriate behavior bleeds into the fieldwork component of a scientist's research. In a 2013 study, 64% of 650 surveyed scientists had personally experienced some sort of gender-based harassment while conducting fieldwork, including remarks about sex, physical appearance, or different intelligences between men and women (*New Light*). Harassment in the field is not only completely unprofessional, but also creates another barrier for women to overcome – sends the message that, 1, the institutions do not care enough to manage safety measures while in the field, and 2, that this behavior will go unpunished. It is then much harder for women to gain similar and necessary qualifications, data, and experience to men in the same specialty as fieldwork is one of the most important pieces of scientific research, jobs, and processes. The incidents of sexual harassment and assault do not end there, however, and the toxic culture is pervaded by the employers and supervisors. In fact, “[M]ost unwanted advances toward female researchers came from their supervisors—the very professors who determine advancement along the tough path toward tenure” (*New Light*). Supervisors hold a large amount of power over their employees and students – people who are put in a very difficult and complicated position when those supervisors take advantage of them. Unfortunately, 70% of women reported experiencing sexual harassment, often from their supervisors (*Sexual Harassment*). The sad reality that most victims encounter is the idea that if

they speak up, their career could be forever damaged or even halted, yet if they don't, the abuse will continue.

The prevalent sexism is not the only issue to recognize, however, there is another layer of bias and discrimination that people of color, and especially women of color, experience in the astro/aero-field. Racism is not only rampant in the classroom, but also in the professional setting. “[A] professor remarked that any student of color who entered the field could be expected to be academically weak. The worst part is that no one else pointed out that the comment was inappropriate” (Isler). The idea that a professor could make a remark like this in the 2010s with no repercussions or even being called-out is astonishing and terrifying, especially because these professors determine who will succeed and who will not, and entering the environment with a bias against colored students produces a dangerous situation wherein colored students are inherently less likely to succeed despite any abilities they may have. Jedidah Isler, one of less than 100 black women with doctorates in physics and astronomy and the first black woman to earn a Ph.D. in astronomy at Yale University (Isler) remarks on her personal experiences with racism, but specifically intersectionality in the astro/aero-field, “[t]here was the time she was at a national astronomy meeting and a fellow scientist asked her what was on the menu. The man had assumed she was a food server. It wasn't the first time something like that had happened” (Isler). Isler's experiences highlight that there are still harmful preconceptions and stereotypes that continue to exist in the professional field. Her case also presents evidence that harmful and negative comments coming from peers can have a negative effect on the quality of work and as well as their motivation to keep working. Additional data states that more than 1/10 white women and almost 1/5 women of color have skipped a class, field work opportunity, or professional event because they felt unsafe (Kaplan). The idea that women have felt unsafe in the

workplace to the point of skipping a possibly important and valuable opportunity or event illustrates exactly how damaged the work environment is for women, especially women of color. These incidents lend themselves to a culture of unfairness where white men receive more opportunities and have more experiences simply because they are white and they are men. Women and especially women of color should not feel targeted to the point of their safety and their careers being targeted in the place where they work.

The toxic environment of widespread sexual harassment in the astro/aero-field has a large impact on the students' futures and mindsets. The supervisors have a chokehold on the futures of their students. Katie Hinde, an Arizona State University biologist who co-authored a study on how common sexual harassment is in science, describes how "70% reported experiencing sexual harassment, often from their supervisors [...] who had power over their career, [...] and] their research" (*Sexual Harassment*). 70% is an incredibly high statistic for an entire field of research and all the people in it. The students' and researchers' supervisors have a hold on their careers; they decide who sinks and who swims, and if the student reported anything, it is incredibly likely that the supervisor would take that future away. Sexual harassment from higher up in the food chain creates an unjust system where some students exist on an even playing field, whereas others have blackmail lorded over their heads by people who stand in the way of their possibilities.

Not only are there long-lasting effects of sexism from a professor or supervisor, there are also impactful effects of racism in the field. Dr. Jedidah Isler details the different ways in which professors are racist in her article "It's More Than Doing Science. It's Making Inroads for Students Like Me": "Some professors say outwardly racist things, some differentiate in the way they grade, in what their expectations are, and in who they give help to. I have mentioned

troubling encounters before to people in authority who would have the ability to do something. But I've been told I'm making it up, being too sensitive, and that the person doesn't do things like that'" (Isler). Isler highlights that in an instance where a student who is just as smart and just as hardworking as another, but one is white and the other is a person of color, the white student will get farther simply because of the bias the racist professor holds. The idea that a student could report something dangerous and damaging and be dismissed on the basis that they're "making it up" or that the person "would never do something like that" sounds more like something from the 1950s, not from today's world with today's standards. This disparaging response sends the message that this behavior is okay to continue engaging in as it will seemingly never go punished.

The occasions of sexism and racism from higher-ups can lead to profound impacts on the mentality of the student or employee. In the *Harvard Magazine* article entitled, "New Light on Academia's Glass Ceiling," Dr. Katie Hinde remarks, "The psychological well-being impact—when it's up from the hierarchy—is significantly higher, it can affect job performance, motivation'" (*New Light*). In addition to their careers being jeopardized by biased professors, the mental wellbeing of the student is also affected by racism and sexism – especially when coming from higher in the hierarchy. The resulting negative intellectual effects can also lead to even more adverse reactions and lead to poor motivation and performance – generally leading to even worse outcomes, such as being let go from a job and decreasing mental health and self-esteem. Dr. Isler attended the Fisk-Vanderbilt Master's-to-Ph.D. Bridge Program, which seeks to expand access for minority students to advanced-degree programs in science, math, and engineering (Isler), at Vanderbilt, she is a mentor to minority and female astrophysics students. Isler remarks, "[s]ometimes, [...] students question whether they belong after experiences or encounters that

make them feel like outsiders” (Isler). Students should never feel as though their place is questioned – they should feel safe and at home in their preferred field of study with their colleagues and peers. Everyone deserves to feel that all-important sense of belonging.

The institutions of the astro/aero-field have had a wide range of responses to the studies, articles, and reports of sexual harassment (especially in instances of intersectional identities) – from null, negative, and even positive progress. In the case of intersectionality, there is largely no response from the institutions in which the people in question work and learn. “[A]ttempts to make the field more inclusive don't typically take intersectionality into account, something incredibly dangerous when, for example, women of color face their "double jeopardy" – not only are they more likely to report race-based harassment than minority men, they are also more likely to face sexist comments than white women" (Kaplan). The institutions need to be more aware and mindful of people with intersectional identities who encounter more difficulties in the industry. Institutions which fail to take this important factor into account unconsciously repel potential colleagues and peers who, given the resources, could accomplish something great in the astro/aero-field. Not only is there a lack of response from the institutions on the issue of intersectionality in their employees – there is a negative response to harassment and assault which results in no more consequence than a slap on the wrist for the one at fault. In an NPR morning edition, Heather Meclaf of the Association for Women in Science discussed how women are told to keep quiet about events of sexual harassment, those behaviors being brushed off, “[w]omen are often told to keep hush-hush about lewd comments, touching, and leering. [...] there is a bit of a norm for those behaviors to be sort of brushed off, rather than taken seriously” (*Sexual Harassment*). The culture of sexual harassment and assault in the astro/aero-field is so normalized and prevalent that the woman in question is told to keep silent – that this is normal,

that there's no need to draw attention to it, "it happens to everyone". Not only is the negative culture and response damaging to the victim, whose concerns are brushed off as they are taught to think that it is okay to be treated like that by a peer or a supervisor, but it is also damaging to the instigator, who will continue to think that their behavior is acceptable and develop a harmful mindset in how they treat and think of others – they should not be allowed to be taught to believe inappropriate actions are allowable.

Despite the general lack of or even negative response on many of the system's behalfs, little bits and pieces of progress can be found throughout the field at large – whether in small astronomy clubs or in national organizations. Karen Jennings, a casual “star party” attendee describes how, as much as it might seem an entirely negative environment, there are "men who recognize the issue and who actively work within their own astronomy clubs as well as national organizations to help transcend traditional gender roles and encourage participation by more women" (Jennings). Despite all the issues the astro/aero-field faces, there are people in power (typically men as they hold the most weight in their respective institutions) who are currently working to address the issues in whatever way they can. These people give hope to the rest of the community that things can change – and for the better. Their actions help send the message that the inappropriate behavior that continues to pervade the astro/aero- communities is unacceptable and will not be tolerated – it will not go unnoticed or unpunished. Although it is little progress, it is still something to recognize and celebrate, one step at a time may still lead to great change and success.

The treatment of women in the astro/aero-field has been incredibly harsh and negative for a very long time – ranging from gender bias among peers and sexual harassment and assault from peers and even supervisors, the very people who should be trusted to maintain the safety

and dignity of their employees or students. Many women, in addition to experiencing the prevalent sexism in the field, also face a “double jeopardy”, wherein women of intersectional identities – such as women of color face more difficulties and obstacles than white women or minority men. The racism they experience in the classroom and in the professional setting is unfair and unjust to their futures, opportunities, and careers. The impact of the bias and harassment that women experience is long-lasting and widespread. For those students and researchers who experience sexual harassment from their supervisor, employee, or professor, their opportunities and futures are stifled by those who lord their blackmail over their heads; something similar applies to racism in the classroom, as many times racist professors will grade minority students lower than their white students and the minority students lose out on opportunities, scholarships, or jobs simply because they were graded on a biased scale. The racism and sexism that these women experience – the harassment – can lead to worsened mentalities and outlooks, generally continuing into poor performance or motivation which can result in negative outcomes, even being fired. There is a wide variety of responses from the institutions on these issues; very little is being done to improve the obstacles people of intersectionality face, the sexual harassment and assault issue seemingly only gets worse as the only consequences the perpetrators face for their actions is a slap on the wrist, yet despite these negatives, there are small steps being made toward progress by those power (typically men as they tend to hold the most weight) for the betterment of the community. The incredibly high levels of sexual harassment, assault, and racism that women experience in the astro/aero-field discourages more women from pursuing careers in the discipline, but it should not, and does not, stop women from continuing to make advances in their careers, in science, and in the world.

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