

National Aeronautics and Space Administration

**Headquarters**

Washington, DC 20546-0001



Reply to Attn of:

Office of Diversity and Equal Opportunity

Dr. Thomas F. Rosenbaum  
President  
Office of the President  
Parsons-Gates, Mail-Code 204-31  
California Institute of Technology  
Pasadena, CA 91125-3100

Dear Dr. Rosenbaum:

The National Aeronautics and Space Administration (NASA) and the National Science Foundation (NSF) have completed their joint compliance review of the California Institute of Technology (Caltech), a recipient of NASA and NSF financial assistance. The review was conducted pursuant to Title IX of the Education Amendments of 1972 (Title IX) and NASA and NSF Title IX implementing regulations, which prohibit discrimination on the basis of sex in educational programs receiving Federal financial assistance through NASA and NSF. The review was limited in scope to Caltech's compliance with basic Title IX procedural requirements, such as internal complaint procedures, as well as an assessment of Caltech's efforts to ensure equal opportunity regardless of sex within the NASA and NSF-funded Physics, Mathematics, and Astronomy (PMA) Division.

NASA and NSF did not find evidence of non-compliance with Title IX procedural requirements regarding the coordination, content and implementation (in PMA) of Caltech's Title IX complaints procedures. We do, however, make recommendations to strengthen the communication of the procedures to the academic community, including information on timeframes for filing Title IX complaints directly with federal agencies.

Regarding PMA, NASA and NSF note that there appears to be a sex-based difference in the number of women and men choosing to enroll in the graduate Physics and Mathematics programs compared to those accepted into these programs. We recommend that PMA conduct a careful analysis regarding why women are not matriculating into these programs to ensure that women are not being discouraged from attending.

In addition, we are concerned about potential sex-based biases and the possible presence of harassing conduct in the program environment based on our limited scope review, particularly the results of our Title IX survey. A few of the survey responses indicate the need for greater efforts to address concerns regarding possible harassing conduct and to

create a more inclusive and welcoming program environment. All of the recommended efforts should be part of a Title IX self-evaluation conducted by PMA with the assistance of the Title IX Coordinator's office. NASA and NSF will conduct monitoring on our recommendations no earlier than six months from the date of this report, including a report from Caltech on its implementation of our recommendations.

Finally, NASA and NSF have also observed a few promising practices of Caltech PMA. These practices are illuminated in detail in the enclosed report.

For additional civil rights technical assistance, Caltech may also wish to visit our MissionSTEM Web site at <http://missionstem.nasa.gov/>. We appreciate Caltech's cooperation in facilitating NASA's review prior to, during, and after the on-site visit. In particular, we would like to thank April White Castenada, Assistant Vice President for Equity and Equity Investigations/Title IX Coordinator and Felicia Hunt, Assistant Vice President for Student Affairs and Residential Experience. We would also like to express our appreciation to Dr. Fiona Harrison, PMA Division Chair, and the faculty, staff, and students of the PMA program for their participation in the review.

Please be advised that, in the interest of transparency, NASA and NSF post our Title IX compliance reports on the MissionSTEM and Office of Diversity and Inclusion Web sites, respectively. The report and related records also may be disclosed through a Freedom of Information Act request.

If you have any questions regarding this correspondence, please contact Mr. Richard N. Reback, Director, Complaints and Programs Division at 202-358-2180 or [Richard.N.Reback@nasa.gov](mailto:Richard.N.Reback@nasa.gov).

Sincerely,



Stephen T. Shih  
Associate Administrator  
Diversity and Equal Opportunity  
NASA



Rhonda J. Davis  
Office Head  
Office of Diversity and Inclusion  
NSF

Enclosures

cc:

Ms. April White Castenada, Assistant Vice President for Equity and Equity Investigations/Title IX Coordinator

Ms. Felicia Hunt, Assistant Vice President for Student Affairs and Residential Experience

Dr. Fiona A. Harrison, Division Chair, PMA Division

**National Aeronautics and Space Administration  
National Science Foundation**

**NASA and NSF  
Joint Title IX Compliance  
Report**

**California Institute of Technology  
Division of Physics, Mathematics, and Astronomy**

**August 2019**

**NASA and NSF Joint Title IX Compliance Report  
August 2019**

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# NASA and NSF Joint Title IX Compliance Report

## August 2019

### I. INTRODUCTION

NASA and NSF conducted a joint Title IX compliance review of the California Institute of Technology (“Caltech”) Division of Physics, Mathematics, and Astronomy (PMA), a recipient of NASA and NSF funding. The review assessed Caltech’s compliance with Title IX of the Education Amendments of 1972, and NASA and NSF’s implementing regulations and policies prohibiting discrimination on the basis of sex in educational programs and activities receiving Federal financial assistance.<sup>1</sup> Title IX regulations and Agency authorizing legislation provide for periodic review of grant recipients.<sup>2</sup> The agencies selected Caltech for a joint Title IX compliance review in part due to concerns of sexual harassment in the Astronomy Department, as reported in the media.<sup>3</sup>

### II. COMPLIANCE REVIEW ANALYSIS

In conducting this compliance review, NASA and NSF reviewed documents provided by Caltech in response to the agencies’ information requests and conducted a survey of students and post-doctoral researchers (post-docs). On February 6-8, 2018, the agencies conducted an onsite review of PMA, during which the review team interviewed 43 PMA faculty, graduate and undergraduate students, post-docs and University administrators involved in the implementation of Title IX requirements.

The compliance review analysis provides an assessment of issues within two focus areas: procedural compliance requirements and methods of program administration. Regulatory requirements and findings of fact are set forth as part of the compliance assessment under each main topic. NASA currently relies on guidance from the U.S. Department of Education Office for Civil Rights (OCR) and the Department of Justice Civil Rights Division (DOJ) to analyze Title IX statutory and regulatory requirements. The associated recommendations are intended to strengthen existing compliance. Promising practices associated with each of the compliance areas are also reported.

#### A. Designation of Official for Title IX Coordination and Enforcement

##### *1. Compliance Assessment*

NASA and NSF base this compliance assessment on applicable Title IX regulations stating that a recipient must designate an official responsible for Title IX coordination and enforcement, i.e., a “Title IX

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<sup>1</sup> Title IX of the Education Amendments, as amended (20 U.S.C. §§ 1681-1688); Nondiscrimination on the Basis of Sex in Education Programs or Activities Receiving Federal Financial Assistance, 14 C.F.R. Part 1253 (NASA Title IX regulations); Nondiscrimination on the Basis of Sex in Education Programs or Activities Receiving Federal Financial Assistance, 45 C.F.R. Part 618 (NSF Title IX regulations); NASA Policy Directive 2081.1A, Subject: Nondiscrimination in Federally Assisted and Federally Conducted Programs of NASA - Delegation of Authority.

<sup>2</sup> See 65 Fed. Reg. 52, 859 (Aug. 30, 2000). See, Enforcement Procedures, 14 C.F.R. § 1253.605, 45 C.F.R. § 618.605 (incorporating compliance requirements of Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d)).

<sup>3</sup> See, e.g., Jeffrey Mervis, “Caltech suspends professor for harassment,” *Science*, Jan. 12, 2016, accessed at <<https://www.sciencemag.org/news/2016/01/caltech-suspends-professor-harassment>>; Hailey Branson-Potts, “Caltech professor resigns after investigation finds he harassed female grad students,” *Los Angeles Times*, Aug. 2, 2017, accessed at <<https://www.latimes.com/local/lanow/la-me-in-caltech-professor-resigns-20170802-story.html>>. For additional criteria on selecting grant recipients for Title IX compliance reviews, see NASA Procedural Requirements 2081.1B, § 2.2.5.3 Selection of Targeted Recipients, accessed at <[https://nodis3.gsfc.nasa.gov/npg\\_img/N\\_PR\\_2081\\_001A/\\_N\\_PR\\_2081\\_001A\\_.pdf](https://nodis3.gsfc.nasa.gov/npg_img/N_PR_2081_001A/_N_PR_2081_001A_.pdf)>.

Coordinator,” and disseminate the Title IX Coordinator’s contact information to the recipient’s academic community.<sup>4</sup> In addition, DOJ and OCR guidance provide the following considerations for assessing the quality of Title IX Coordination efforts of recipients: (a) effective functioning, including skills and competencies, regarding the key responsibilities of administering and implementing the University’s Title IX grievance process; (b) the authority and access of the Title IX Coordinator to University senior leadership needed to effectively perform roles and responsibilities; and (c) training of faculty, staff, and students, as well as staff responsible for responding to allegations of sexual harassment.<sup>5</sup>

<i>Review Criteria: Designation of Title IX Coordinator and Dissemination of Contact Information</i>	<i>Yes</i>	<i>No</i>
1. The University has designated a Title IX Coordinator.	X	
2. The University has notified faculty, staff, and students of the Title IX Coordinator’s contact information (including name, office address, and telephone number).	X	
3. A majority of Departmental faculty, students, and staff interviewed are familiar with the name and/or office of the Title IX Coordinator.	X	
4. The Title IX Coordinator has the skills and competencies to perform the key responsibilities of administering the University’s Title IX grievance process.	X	
5. The Title IX Coordinator has the authority and access to University senior leadership needed to effectively perform roles and responsibilities.	X	

<i>Review Criteria: Provision of Title IX Training</i>	<i>Yes</i>	<i>No</i>
1. The Title IX Coordinator provides training to faculty, staff, and students.	X	
2. Faculty, staff and students interviewed and/or surveyed recall having had education and awareness opportunities on:		
a. Sex discrimination		X
b. Sexual harassment		X
c. Sexual assault awareness		X
d. Implicit (unconscious) bias		X
3. If training is provided, is it mandatory?	X	
4. If training is provided, are there education and awareness modules designed to resonate with science, technology, engineering, and mathematics (STEM) students and faculty, e.g., using hypothetical examples of inappropriate conduct or actions that might occur in a STEM setting such as a lab?		X

**Analysis:**

The Title IX Coordinator leads the Equity and Title IX Office, which focuses on unlawful harassment, sexual misconduct and discrimination, provides education and consultation, receives complaints, and conducts investigations related to Titles VI and VII of the Civil Rights Act of 1964, and Title IX, as well as California law. Based on our review of the Title IX Coordinator’s educational and professional background, interviews with and responses to our information request post-onsite, NASA and NSF find

<sup>4</sup> Contact information dissemination must include the Title IX Coordinator’s name, office address, and telephone number. See, Designation of responsible employee and adoption of grievance procedures, 14 C.F.R. § 1253.135(a), 45 C.F.R. § 618.135(a).

<sup>5</sup> See DOJ, “Questions and Answers Regarding Title IX Procedural Requirements” (hereafter referred to as “Title IX Q&A”), accessed at <<http://www.justice.gov/crt/about/cor/coord/TitleIXQandA.php>>; OCR, Dear Colleague Letter on Title IX Coordinators, April 24, 2015, accessed at <<http://www2.ed.gov/about/offices/list/ocr/letters/colleague-201504-title-ix-coordinators.pdf>>; OCR, *Title IX Resource Guide*, April 2015, accessed at <<http://www2.ed.gov/about/offices/list/ocr/docs/dcl-title-ix-coordinators-guide-201504.pdf>>; OCR, “Q&A on Campus Sexual Misconduct,” September 2017, accessed at <<https://www2.ed.gov/about/offices/list/ocr/docs/qa-title-ix-201709.pdf>>.

the Title IX Coordinator possesses the requisite skills and competencies to perform the requirements of her position as established in OCR guidance.<sup>6</sup> This includes a broad-based professional background that encompasses human resources, policy development, and investigative skills. Further, the Title IX Coordinator enjoys direct access to the administrators in Human Resources and Student Affairs and consults regularly with these officials on Title IX issues and cases.<sup>7</sup>

With regard to the effectiveness of information dissemination on the Title IX Coordinator and the requirements of Title IX, NASA and NSF find that most of the PMA Division faculty, staff, and students interviewed for this review were generally familiar with the Title IX Coordinator's role and the name of her office. Many noted that Caltech routinely provides information on Title IX and how to raise complaints through email, postcards, posters, and other forms of communication. NASA and NSF view these efforts as strategic and effective means of meeting the regulatory requirement for information dissemination relating to the Title IX Coordinator and office.

Another critical responsibility of the Title IX Coordinator is to provide training to all members of the school community, including faculty, staff, and students.<sup>8</sup> While Caltech informed the NASA and NSF review team that Title IX training was mandatory for all students and faculty, most students interviewed did not recall the training and postdoctoral fellows informed us they had not received any Title IX training. This suggests additional efforts are needed regarding training (see Recommendation below).

## 2. Recommendation

**Title IX Training.** Caltech should ensure that all members of the University community receive Title IX training, including post-docs. Annual Title IX training should resonate with its intended audiences, including STEM students and faculty. This goal can be furthered by: (1) utilization of the “Unconscious Bias in STEM” learning tool developed by NASA (available on the NASA MissionSTEM Web site, <http://missionstem.nasa.gov/eLearn.html>); and (2) Title IX training with examples from different disciplines or separate modules designed specifically for individual or grouped disciplines, such as STEM. Specific examples, case studies, or scenarios in settings recognizable to a STEM faculty, e.g., in the classroom, lab, and at professional conferences, might help participants retain the information shared. Such training should focus both on subtler forms of gender bias that can pervade STEM program environments, as well as on more egregious examples of sexual harassment.

## 3. Promising Practice

**Title IX Representatives.** Caltech has Title IX representatives in each of its residence halls charged with informing students of Title IX information and support. They host discussion groups and programs addressing Title IX topics, such as harassment, violence, consent, bystander intervention, and the role of drugs and alcohol in harassment or related incidents.<sup>9</sup>

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<sup>6</sup> See generally OCR, *Title IX Resource Guide*.

<sup>7</sup> See Caltech Title IX Office, “NASA/NSF Title IX Compliance Review Physics, Mathematics and Astronomy: Supplemental Information,” April 2, 2019. The Title IX Coordinator reported that she consults regularly with these officials on cases and receives their full support in the day-to-day performance of her duties.

<sup>8</sup> OCR, *Title IX Resource Guide* at 2-3.

<sup>9</sup> Caltech, Response to NASA and NSF Information Response Pursuant to Title IX of the Education Amendments Act of 1972, October 2017, p. 44 (hereafter referred to as Caltech Information Response).

## B. Adoption of Grievance Procedures and Policy Dissemination

### 1. Compliance Assessment

NASA and NSF base this compliance assessment on applicable Title IX regulations requiring that recipient educational institutions adopt and publish grievance procedures providing for prompt and equitable resolution of student and employee complaints alleging any action that would be prohibited by Title IX. The regulations also require grant recipients to take specific and continuing steps to notify students, employees, applicants for admission and employment, and unions or professional organizations having collective bargaining or professional agreements with the recipient that the recipient does not discriminate based on sex in the educational programs or activities that it operates, and that it is required by Title IX not to discriminate in such a manner.<sup>10</sup> We assess Caltech's compliance with regard to (a) the content of the grievance procedures and how they are implemented in PMA, and (b) notice to the academic community or policy dissemination, as discussed below.<sup>11</sup>

#### a. Grievance Procedures – As Written and Disseminated

<i>Review Criteria: Grievance Procedures As Written – Required by OCR<sup>12</sup></i>		
<i>In evaluating whether a school's grievance procedures are prompt and equitable, NASA and NSF assess whether the procedures provide for:</i>	<i>Yes</i>	<i>No</i>
1. Notice of right to file with appropriate Federal agency, either simultaneously or after unsatisfactory resolution of internal grievance.	X	
2. Notice to students and employees of procedure, including where complaints may be filed.	X	
3. Application of procedure to complaints alleging harassment carried out by employees, other students, or third parties.	X	
4. Provisions for adequate, reliable, and impartial investigation of complaints, including the opportunity to present witnesses and other evidence.	X	
5. Designated and reasonably prompt timeframes for the major stages of the complaint process.	X	
6. Simultaneous, written notice to complainant and alleged perpetrator of the outcome of complaint.	X	
7. Assurance that the school will take steps to prevent recurrence of any harassment and correct its discriminatory effects on the complainant and others, if appropriate.	X	

<i>Review Criteria: Grievance Procedures As Written – Recommended Best Practices</i>		
<i>Although not required, NASA and NSF recommend that grievance procedures include:</i>	<i>Yes</i>	<i>No</i>
1. Definition of sexual harassment.	X	
2. Explanation as to when such conduct creates a hostile environment.	X	
3. Reporting policies and protocols, including provisions for confidential reporting.	X	
4. Identification of employee(s) responsible for evaluating requests for confidentiality.	X	

<sup>10</sup> See, Designation of responsible employee and adoption of grievance procedures, 14 C.F.R. § 1253.135(b), 45 C.F.R. § 618.135(b), and Dissemination of policy, 14 C.F.R. § 1253.140, 45 C.F.R. § 618.140.

<sup>11</sup> Caltech's Title IX procedures may be accessed at <http://titleix.caltech.edu/PolProc>; Caltech disseminates its policy online (see "Sexual Misconduct: Resources for Faculty, Staff and Students," accessed at <http://titleix.caltech.edu/documents/3-caltech-titleixcard-v6.pdf>).

<sup>12</sup> See DOJ, Title IX Q&A, "Grievance Procedures;" OCR, Revised Sexual Harassment Guidance: Harassment of Students by School Employees, Other Students, or Third Parties, " January 19, 2001, § IX. Prompt and Equitable Grievance Procedures, accessed at <https://www2.ed.gov/about/offices/list/ocr/docs/shguide.html>.

<i>Review Criteria: Grievance Procedures As Written – Recommended Best Practices</i>		
<i>Although not required, NASA and NSF recommend that grievance procedures include:</i>	<i>Yes</i>	<i>No</i>
5. Notice of:		
• Title IX prohibition against retaliation.	X	
• Student’s right to file a criminal complaint and Title IX complaint simultaneously.	X	
• Available interim measures that may be taken to protect the student in the educational setting.	X	
• Potential remedies for students.	X	
• Potential sanctions against perpetrators.	X	
6. Sources of counseling, advocacy, and support.	X	
7. Appeal rights. <sup>13</sup>	X	

<i>Review Criteria: Notice and Dissemination of Title IX Policies and Grievance Procedures</i> <sup>14</sup>		
	<i>Yes</i>	<i>No</i>
1. The University provides notice of its commitment to equal opportunity regardless of sex in its catalogues, bulletins, and applications in connection with recruitment for students and faculty.	X	
2. The University’s grievance procedures have been appropriately disseminated and efforts have been made to ensure ease of access and understanding.	X	
3. Title IX policies and procedures are posted in the following locations:		
a. On University Web site for Title IX Coordinator	X	
b. On University Web site for Student Affairs or other office	X	
c. In University handbook and/or catalog	X	
d. In the Department under review (i.e., on a poster or other notice)	X	
4. The Title IX procedures are easily found through a search on the University Web site.	X	
5. Students are regularly reminded of Title IX policies and procedures via email or letter (e.g., at the start of each semester).	X	
6. PMA students interviewed stated they knew the process for filing a Title IX complaint.		X
7. PMA faculty interviewed stated they knew the process for filing a Title IX complaint.		X

**Analysis:**

*Procedures as Written:* NASA and NSF’s review did not reveal evidence of noncompliance with Caltech’s written Title IX grievance procedures. The procedures address the considerations identified by DOJ and OCR as necessary to meet the Title IX regulatory standard of “prompt and equitable,” as reflected in the charts above, including NASA and NSF-recommended best practices. Caltech’s procedures also inform members of the academic community that they may file a complaint directly with OCR; however, the procedures do not provide timeframes for filing a complaint of sex discrimination or sexual harassment with a federal agency under Title IX.

<sup>13</sup> OCR states: “If a school chooses to allow appeals from its decisions regarding responsibility and/or disciplinary sanctions, the school may choose to allow appeal (i) solely by the responding party; or (ii) by both parties, in which case any appeal procedures must be equally available to both parties.” OCR, “Q&A on Campus Sexual Misconduct,” Question 11.

<sup>14</sup> The NASA Title IX regulations state that “[e]ach recipient shall prominently include a statement of the policy described [in the regulations] in each announcement, bulletin, catalog, or application form that it makes available [to program beneficiaries].” 14 C.F.R. § 1253.140, Dissemination of Policy, (b)(1). Importantly, OCR states in its January 2001 guidance that “[a] grievance procedure . . . cannot be prompt or equitable unless students know it exists, how it works, and how to file a complaint. Thus, the procedures should be written in language appropriate to the age of the school’s students, easily understood, and widely disseminated.” Revised Sexual Harassment Guidance, § IX. Prompt and Equitable Grievance Procedures.

*Policy Notice and Dissemination:* Caltech meets the Title IX notice requirement by posting notice of its commitment to equal opportunity regardless of sex in its student catalogues and applications in connection with recruitment of students and employees, as provided for in NASA regulations and OCR guidelines. In addition to its Title IX office Web site, Caltech provides additional information on its Title IX policies and procedures through the following means:

- Caltech flyers such as “No Excuse” and “Step Up and Be an Active Bystander;”
- Information guides such as “Title IX: What Every Caltech Student Should Know,” “Title IX Reporting,” and “Violence Prevention;” and “Caltech New Student Information Guide;” and
- “The Caltech Community” letter from the Title IX Coordinator.<sup>15</sup>

Title IX also requires federal grant recipient institutions to ensure that their policies and procedures are both easy to understand and easily accessible for students, faculty, and staff. In this regard, NASA and NSF found that a search for “sexual harassment” on the Caltech Web site provides several links that are helpful to the reader in locating resources, primarily through the Title IX office site; however, NASA and NSF also found that student and faculty interviewees were generally unclear as to how the complaint filing process works despite the information available to them through Caltech’s Title IX office Web site. In addition, according to the University’s 2015 climate survey and indicated in NASA and NSF’s review, a large number of PMA students appear to have questions as to the policies and procedures surrounding sexual assault, sexual misconduct, and reporting these issues (see Recommendations below).<sup>16</sup>

*b. Grievance Procedures – As Implemented by the University and Department*

<i>Review Criteria: Grievance Procedures As Implemented by the Department</i>	<i>Yes</i>	<i>No</i>
1. In the Department in the past 5 years, there have been formal complaints of:		
• Sex discrimination	X	
• Sexual harassment	X	
• Sexual assault		X
2. If yes, did the University follow the written Title IX procedures in addressing the incident(s)?	X	
3. Faculty, staff, and/or students reported other or potential incidents of:		
• Sex discrimination		X
• Sexual harassment		X
• Sexual assault		X

***Analysis:***

NASA and NSF’s review did not reveal evidence of non-compliance regarding Caltech’s implementation of its Title IX procedures in complaints arising in PMA. Relevant OCR guidance advises schools that in order for their grievance procedures to be “prompt and equitable,” as required in the Title IX regulations, schools’ procedures must provide “each party the same meaningful access to any information that will be used during informal and formal disciplinary meetings and hearings, including the investigation report”

<sup>15</sup> Caltech Information Response, Tab 2.

<sup>16</sup> Caltech, 2015 Campus Climate Survey on Sexual Assault and Sexual Misconduct, Table 2.1, accessed at <<http://www.caltech.edu/news/caltech-releases-results-aau-campus-climate-survey-sexual-assault-and-sexual-misconduct-47939>>.

and that the report should summarize all relevant evidence.<sup>17</sup> During the time period of this review (the past five years), Caltech informed NASA and NSF of two substantiated sexual or sex-based harassment complaints within PMA.<sup>18</sup> Regarding one of these cases, in an interview with NASA and NSF, a former faculty member found to have violated Caltech’s sexual harassment policy claimed that Caltech refused to allow him to see a copy of the report of investigation. The former faculty member also alleged that investigators assigned to the investigation allowed one of the complainants to “veto a key exculpatory witness” the faculty member requested to testify.

NASA (with concurrence from NSF) requested Caltech’s response to the concerns raised by the former faculty member. The University responded: “Testimony from all pertinent witnesses was considered in the course of the proceedings. [Caltech] did not find the witness testimony referenced by the former faculty member to be convincing or exculpatory given the extensive written record of communications between the faculty member and his graduate students that was uncovered. While the names of certain witnesses were withheld based on his documented retaliatory behavior, [the former faculty member] and his lawyer were fully apprised of the scope, testimony, findings and conclusions of the investigation. [Caltech] firmly believes that the matter was handled expeditiously and appropriately.”

NASA requested that Caltech verify it considered testimony from the witness referenced by the former faculty member and that the University informed him in writing of the results of the investigation. In response, Caltech provided NASA with access to the investigative record in this case. Based on its review of pertinent documents in the record, NASA regards Caltech’s rendering of the process it followed in this case, as discussed above, as being consistent with the Title IX regulatory provision requiring “prompt and equitable” processing of complaints and OCR guidance providing standards for assessing compliance with this provision.

Additionally, onsite interviews revealed potential issues regarding the selection and training of Caltech Title IX investigators. For example, one investigator informed NASA and NSF he had not received any Title IX training from Caltech. Caltech subsequently informed NASA that it has revised its Title IX investigative process, in part to ensure that Caltech relies on professionally trained investigators. Caltech also reported that it expanded its Title IX office by creating the Caltech Equity and Title IX Office, which “focuses on all forms of unlawful harassment, sexual misconduct and discrimination.” Caltech increased staffing for this expanded office by adding a full-time investigator and an additional Deputy Title IX coordinator dedicated to students.<sup>19</sup>

## ***2. Recommendations***

**a. Additional Information on Filing with Federal Agencies.** Caltech should inform members of the academic community of the timeframes<sup>20</sup> for filing a complaint of sex discrimination or sexual harassment with a federal agency under Title IX, and that there is no requirement to exhaust remedies through Caltech’s internal procedures before filing directly with a federal agency. Additionally, Caltech should state that

<sup>17</sup> OCR, Q&A on Campus Sexual Misconduct, Questions, 6 and 8.

<sup>18</sup> Caltech, “Assurance of Compliance with the National Aeronautics and Space Administration Regulations Pursuant to Nondiscrimination in Federally Assisted Programs,” NASA Form 1206, Section 2, 2016.

<sup>19</sup> See Caltech Title IX Office, “NASA/NSF Title IX Compliance Review Physics, Mathematics and Astronomy: Supplemental Information,” April 2, 2019.

<sup>20</sup> Under their respective Title IX regulations, NASA has a 180-day filing timeframe while NSF has a 90-day filing timeframe from the last act or occurrence of alleged discrimination, harassment or retaliation.

participants in programs funded by other federal agencies providing federal financial assistance to Caltech may file directly with those agencies. This information should be provided in the procedures themselves as well as in communications materials (e.g., those located on the Title IX office Web site).

**b. Dissemination of Information About the Title IX Complaint Process.** Caltech should provide messaging to academic departments relating to the Title IX complaint process. For example, Caltech programs receiving federal funds from NASA should post NASA’s brochure on nondiscrimination under the grant-related civil rights laws and links to NSF’s ODI [webpage](#), as well as on their Websites. Program Websites also should link to NASA and NSF information on Title IX and how to file a complaint, including a link to NSF’s Awardee Program Complaint [Form](#).<sup>21</sup>

## C. Recruitment, Admissions, Enrollment, Degrees Earned, and Faculty Recruitment<sup>22</sup>

### *1. Compliance Assessment*

NASA and NSF base this compliance assessment on applicable Title IX regulations stating that recipients may not discriminate on the basis of sex in admissions and recruitment. Specifically, the regulations prohibit educational institutions from such activities as:<sup>23</sup>

- Giving preference to one person over another on the basis of sex, by ranking applicants separately on such basis, or otherwise;
- Applying numerical limitations upon the number or proportion of persons of either sex who may be admitted;
- Administering or operating any test or other criterion for admission that has a disproportionately adverse effect on persons on the basis of sex;
- Making pre-admission inquiries as to the marital status of applicants for admission (including whether such applicant is “Miss” or “Mrs.”); and
- Applying rules concerning actual or potential parental, family, or marital status of an applicant that treats persons differently on the basis of sex when determining whether a person satisfies admission criteria.

In addition, applicable regulations regarding the prohibition of discrimination on the basis of sex in employment in educational programs also apply to the recruitment, advertising, and the process of application for employment.<sup>24</sup> Note that for the purposes of this report, NASA defines “outreach” as education outreach designed to inform and encourage student participation in STEM programs; “recruitment” focuses on recruitment for the purposes of hiring or encouraging students to apply to the university as undergraduate or graduate students.

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<sup>21</sup> NASA MissionSTEM, “Harassment and Discrimination Reporting for NASA Employees, Contractors and Grantee Beneficiaries, accessed at <<https://missionstem.nasa.gov/filing-a-complaint.html#fileComplaint>>; NSF, “Title IX Frequently Asked Questions (FAQs),” accessed at <[https://www.nsf.gov/od/odi/awardee\\_civil\\_rights/titleix\\_faqs.jsp](https://www.nsf.gov/od/odi/awardee_civil_rights/titleix_faqs.jsp)>.

<sup>22</sup> All data in this section pertaining to Caltech students was provided by the University in response to NASA and NSF’s information request. Consistent with these requirements, this review included PMA student recruitment and admissions practices from academic years 2012-2017, as well as data on student departures and degrees earned. We also reviewed financial assistance awarded to graduate students and their success on comprehensive and qualifying examinations.

<sup>23</sup> See, 14 C.F.R. § 1253.300–1253.455, 45 C.F.R. § 618.300-455.

<sup>24</sup> See, 14 C.F.R. § 1253.500, 45 C.F.R. § 618.500.

*a. Outreach and Recruitment*

<i>Review Criteria: Outreach and Recruitment</i>	<i>Yes</i>	<i>No</i>
1. The Department participates in programs to provide outreach to high school students (particularly for female students) to encourage interest in STEM.	<b>X</b>	
2. The Department has undertaken recruitment efforts to attract more female applicants.	<b>X</b>	

**Analysis:**

Caltech conducts a variety of activities to recruit a diverse group of students. Recruitment of undergraduate students is coordinated primarily by the Undergraduate Admissions Office. An undergraduate admissions team visits high schools throughout the United States, holds regional information sessions, and works with community-based organizations. They also send information to high-achieving women and minorities in high schools, based on information received from organizations such as the College Board. PMA faculty participate directly in recruitment efforts for women and other underrepresented groups through phone calls, emails, luncheons, and mixers. In 2017, the University’s Summer Preview program for prospective undergraduate women, prospective students who identify as women, and their parents, included a keynote address by the PMA , Division Chair, a reflection of PMA’s commitment to ensuring equal opportunity regardless of sex. In 2015, Caltech created a Recruitment, Outreach and Admissions Coordinator in the Office of the Dean of Graduate Studies. Caltech staff also attend national science conferences and graduate recruitment fairs throughout the year. PMA regularly participates in such activities.<sup>25</sup>

*b. Graduate Admissions, Enrollment, and Degree Progress*

<i>Review Criteria: Graduate Admissions, Enrollment, and Financial Aid</i>	<i>Yes</i>	<i>No</i>
1. Graduate admissions criteria appear to be neutral, valid predictors of success; are fairly applied; and have no adverse impact based on sex.	<b>X</b>	
2. There is evidence of a sex-based differential between those accepted and those enrolling.		<b>X</b>
3. Admissions processes and policies are set forth in writing and clearly described.	<b>X</b>	
4. Procedures for selecting students for fellowships, research assistantships, teaching assistantships, and other types of funding are set forth in writing and clearly described.	<b>X</b>	

**Analysis:**

A review of data on offers of acceptance and enrollment in PMA revealed no concerns with the graduate Physics and Astrophysics programs, but raised some concern regarding the graduate program in Mathematics (see Tables 1 and 2). The percentage of women enrolled in Physics is comparable to nationwide enrollments and there has been an upward trend in the percentage of women both accepted and enrolling in the program. Although the percentage of women accepted into the Astrophysics program has declined, enrollments have increased and graduate enrollment in the program exceeds nationwide enrollments. In contrast, a smaller percentage of women were enrolled in the Caltech Mathematics graduate program compared to the nationwide average. Further, both offers of acceptance and matriculation have fluctuated over the past five years. Based on this analysis, we make recommendations to further analyze the enrollments in the Math program.

<sup>25</sup> Caltech Information Response, pp. 4-6.

**Table 1. Average Female Graduate Enrollment: 2012-2016**

Discipline	Nationwide	Caltech
Physics	20.1%	16.2%
Mathematics and Applied Mathematics	32.9%	13.3%
Astronomy and Astrophysics	33.9%	50.6%

Nationwide data are available in the National Science Foundation Survey of Graduate Students and Post Doctorates in Science and Engineering, tables 9 and 10, accessed at <[https://ncesdata.nsf.gov/gradpostdoc/2016/html/GSS2016\\_DST\\_09.html](https://ncesdata.nsf.gov/gradpostdoc/2016/html/GSS2016_DST_09.html)>.

**Table 2. Acceptances and Matriculations, by Sex, 2012-2016: Caltech PMA**

PMA Program	Year	Accepted				Matriculated			
		Male	Female	% Male	% Female	Male	Female	% Male	% Female
Physics	2012-13	67	13	84%	16%	18	2	90%	10%
	2013-14	86	11	89%	11%	32	3	91%	9%
	2014-15	52	14	79%	21%	19	4	83%	17%
	2015-16	67	20	77%	23%	23	6	79%	21%
	2016-17	52	21	71%	29%	18	6	75%	25%
	<b>5-year totals</b>	<b>324</b>	<b>79</b>	<b>80%</b>	<b>20%</b>	<b>110</b>	<b>21</b>	<b>84%</b>	<b>16%</b>
Astrophysics	2012-13	5	7	42%	58%	2	4	59%	41%
	2013-14	8	4	67%	33%	1	3	52%	48%
	2014-15	6	5	55%	45%	1	2	45%	55%
	2015-16	11	7	61%	39%	2	3	42%	58%
	2016-17	10	3	77%	23%	7	1	48%	52%
	<b>5-year totals</b>	<b>40</b>	<b>26</b>	<b>61%</b>	<b>39%</b>	<b>13</b>	<b>13</b>	<b>49%</b>	<b>51%</b>
Mathematics	2012-13	21	1	95%	5%	6	0	100%	0%
	2013-14	20	3	87%	13%	5	2	71%	29%
	2014-15	19	1	95%	5%	7	0	100%	0%
	2015-16	20	2	91%	9%	8	1	89%	11%
	2016-17	19	2	90%	10%	6	2	75%	25%
	<b>5-year totals</b>	<b>99</b>	<b>9</b>	<b>92%</b>	<b>8%</b>	<b>32</b>	<b>5</b>	<b>86%</b>	<b>14%</b>

*c. Undergraduate Admissions, Enrollments, and Degree Progress*

<i>Review Criteria: Undergraduate Admissions, Enrollment, and Financial Aid</i>	<i>Yes</i>	<i>No</i>
1. Undergraduate admissions criteria are neutral, valid predictors of success; are fairly applied; and have no adverse impact based on sex.	X	
2. There is no evidence of a sex-based differential between those accepted and those enrolling.	X	
3. Admissions processes and policies are set forth in writing and clearly described.	X	

**Analysis:**

Undergraduate students at Caltech do not apply to a specific program upon admission. Instead, freshman students work on a core curriculum and declare a major at the end of their first year.<sup>26</sup> Thus, the University does not have data on undergraduate applicants to PMA.

<sup>26</sup> Caltech Information Response, Title IX Coordinator Introductory Letter, p. 1.

*d. Faculty Hires*

<i>Review Criteria: Faculty Hires</i>	<i>Yes</i>	<i>No</i>
1. Search committees receive training/education regarding diversity, unconscious bias, or implicit gender bias.		X
2. Gender diversity is a requirement for search committees.		X
3. The University or Department tracks gender diversity of applicant pools.	X	
4. The University or Department takes steps to ensure the gender diversity of applicant pools.	X	

**Analysis:**

The Division’s efforts to achieve greater gender diversity among its student body may be negatively impacted by the substantial gender disparity at the faculty level. There are a very small number of female faculty members in the Division, although a majority of the female faculty are either tenured or on the tenure track.<sup>27</sup> Nonetheless, all but two of the recent PMA hires have been men (16 of 18 new hires). There have been no women faculty hired in Mathematics in the past five years.

One approach PMA has taken to recruit female faculty is to maintain lists of junior (non-tenured) women and minorities whose careers should be tracked; when deemed ready, they are asked to apply. Committees are instructed to reach out to colleagues to identify promising women and minorities who should be encouraged to apply.<sup>28</sup>

**2. Recommendations**

**a. Sex-Based Differential between those Accepted and those Enrolling.** In looking at the University’s acceptance and enrollment numbers in the Division, there appears to be a sex-based difference in the numbers of women and men accepted into the graduate Physics and Mathematics programs, compared to those choosing to enroll. As part of its Title IX self-evaluation efforts, the Department should conduct a study of why women are choosing not to matriculate into these programs.

**b. Metrics for Monitoring Potential Faculty Candidates.** NASA and NSF recommend Caltech review its current policies and practices in this area to ensure that there is a specific set of well-defined criteria for faculty decision-making as to when a potential candidate is “deemed ready” to be asked to apply. Carefully defined metrics may identify implicit biases that could detrimentally affect the candidate pool.

**3. Promising Practices**

**a. Telephone Campaign.** Caltech works to increase the number of female students who accept their offers with a telephone campaign by faculty and alumni.<sup>29</sup>

**b. Undergraduate Summer Research Programs.** The Freshman Summer Research Institute (FSRI) and Summer Undergraduate Research Fellowships (SURF) provide opportunities for freshman to conduct research early in their academic careers. FSRI is an orientation and academic support program designed to ease the transition from high school to college. It includes a summer research assignment; preparation for

<sup>27</sup> Caltech Information Response, Tab 1.

<sup>28</sup> Caltech Information Response, p. 44.

<sup>29</sup> Caltech Information Response, p. 4.

the first year math course; group field trips, excursions, and social activities; room and board; and travel assistance available for those who qualify. Similarly, SURF students have had the opportunity to conduct research under the guidance of experienced mentors working on the cutting edge of their fields.<sup>30</sup>

**c. Recruitment, Outreach, and Admissions Coordinator.** Caltech created this position in the Office of the Dean of Graduate Studies to support female and underrepresented minority students. This individual also works with admissions committees to recruit women and underrepresented minorities, as well as with faculty to identify potential graduate candidates in the undergraduate studies program.<sup>31</sup>

**d. WAVE Fellows Program.** This program, designed to increase participation of underrepresented students in science and engineering PhD programs, awards Fellows \$600 weekly over the summer, as well as a housing allowance. Students have research opportunities, weekly seminars by faculty and Jet Propulsion Laboratory scientists and engineers, an academic and professional development series, social and cultural activities, field trips, and weekly small student/faculty dinners.<sup>32</sup>

## **D. Program Administration and Environment**

### ***1. Compliance Assessment***

NASA and NSF base this compliance assessment on applicable Title IX regulations providing that a recipient shall not, on the basis of sex, exclude from participation in, deny the benefits of, or otherwise limit any person in any advantage or opportunity pertaining to academic, extracurricular, research, occupational training, or other education program or activity operated by the recipient.<sup>33</sup> Such a denial can occur in the form of sexual harassment; OCR states that sexual harassment is “covered by Title IX if it is sufficiently serious to deny or limit a student’s ability to participate in or benefit.”<sup>34</sup> For example, a claim of hostile educational environment harassment may be established where the conduct is “sufficiently severe, persistent, or pervasive to limit a student’s ability to participate in or benefit from the education program, or to create a hostile or abusive educational environment.”<sup>35</sup>

Further, applicable Title IX regulations include detailed provisions on matters pertaining to marital and parental status. Generally, a recipient may not apply any rule concerning a student’s actual or potential parental or marital status that treats students differently on the basis of sex. The regulations also require that pregnancy and childbirth be treated in the same manner and under the same policies as any other temporary disability or physical condition.<sup>36</sup> Title IX requires that in the case of a recipient that does not maintain a leave policy for its students, or in the case of a student who does not otherwise qualify for leave

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<sup>30</sup> Caltech, “Freshman Summer Research Institute (FSRI),” accessed at <<https://diversitycenter.caltech.edu/programs/fsri>>; Caltech, Student-Faculty Programs, “SURF,” accessed at <<http://sfp.caltech.edu/programs/surf/>>.

<sup>31</sup> Caltech Information Response, p. 5.

<sup>32</sup> Caltech, Student-Faculty Programs, “WAVE Fellows,” accessed at <<http://sfp.caltech.edu/programs/wavefellows>>.

<sup>33</sup> See, Education programs or activities, 14 C.F.R. § 400(a), (b)(7), 45 C.F.R. § 618.400(a), (b)(7).

<sup>34</sup> OCR, Revised Sexual harassment Guidance, “Definition of Harassment,” p. v.

<sup>35</sup> *Ibid.*, p. vi.

<sup>36</sup> See, Marital or parental status, 14 C.F.R. § 1253.445 and 1253.530, 45 C.F.R. § 618.445 and 618.530, and Admission, Prohibitions relating to marital or parental status, 14 C.F.R. § 1253.300(c)(3), 45 C.F.R. § 618.300(c)(3).

under such a policy, “a recipient shall treat pregnancy... as a justification for a leave of absence for as long a period of time as is deemed medically necessary by the student's physician, at the conclusion of which the student shall be reinstated to the status that she held when the leave began.”<sup>37</sup>

The Title IX regulations also incorporate by reference the Title VI regulatory provision prohibiting a recipient from utilizing methods of administration which have the effect of defeating or substantially impairing accomplishment of the objectives of the program.<sup>38</sup>

In order to assess the areas discussed above, NASA and NSF examined the PMA’s program administration in a variety of specific arenas, including academic advising,<sup>39</sup> research participation, classroom and lab experiences, pregnancy and parental leave policies, and physical safety of the program environment. Additionally, both agencies also used the following questions to assess compliance: (a) is access to program opportunities or benefits denied or limited based on sex?; and (b) does program administration have a discriminatory impact based on sex?

*a. Academic Environment (Advising, Classroom, and Lab Experiences)*

<i>Review Criteria: Advising</i>	<i>Yes</i>	<i>No</i>
1. The program has a written process for matching students to advisors.		X
2. There is a standard process for changing advisors, and students are able to do so without repercussions.		X
3. NASA and NSF heard gender-related concerns regarding one or more faculty advisors.	X	
4. Overall, students believe that faculty advising is fair and equitable regardless of sex.	X	

<i>Review Criteria: Classroom/Lab Experiences</i>	<i>Yes</i>	<i>No</i>
1. The program has incorporated methods to improve female undergraduate representation, such as providing dedicated resources or modified curricula to better engage women in STEM, especially early in the program.	X	
2. There is equal access to lab equipment and participation in labs.	X	
3. Students perceive gender bias in high-stakes exams.		X
4. Statistical data suggests differential outcomes based on gender in high-stakes exams.	X	
5. Students of both genders feel as though interactions in the program are generally appropriate and respectful.		X
6. Students feel professors or TAs doubt their abilities because of gender.		X
7. Students have been “warned” to stay away from certain professors because of their treatment of or interactions with students (e.g., rumors of sexual harassment, etc.).		X
8. NASA and NSF heard concerns regarding the following:		
<ul style="list-style-type: none"> <li>Professors/TAs recognizing and calling on one gender more often than another in class discussions.</li> </ul>		X

<sup>37</sup> See, Marital or parental status, 14 C.F.R. § 1253.445 (b)(5), 45 C.F.R. § 618.445(b)(5). OCR’s 2013 Dear Colleague Letter and accompanying technical assistance document provide additional information to educational grant recipients on Title IX requirements pertaining to pregnancy and parental status. OCR, Dear Colleague Letter Supporting the Academic Success of Pregnant and Parenting Students, June 25, 2013, accessed at <<http://www2.ed.gov/about/offices/list/ocr/letters/colleague-201306-title-ix.pdf>>; OCR, *Supporting the Academic Success of Pregnant and Parenting Students Under Title IX of the Education Amendments of 1972*, June 2013, accessed at <<http://www2.ed.gov/about/offices/list/ocr/docs/pregnancy.pdf>>.

<sup>38</sup> See, Enforcement procedures, 14 C.F.R. § 1253.605, 45 C.F.R. § 618.605.

<sup>39</sup> The Title IX regulations state that a recipient may not discriminate on the basis of gender with regard to career counseling or guidance. Counseling and use of appraisal and counseling materials, 14 C.F.R. § 1253.425.

<i>Review Criteria: Classroom/Lab Experiences</i>	<i>Yes</i>	<i>No</i>
<ul style="list-style-type: none"> <li>Professors/TAs interrupting students of one gender but not students of the other, or allowing others in the class to do so.</li> </ul>		X
<ul style="list-style-type: none"> <li>Use of sexist stereotypes through subtle, often unintentional means.</li> </ul>	X	
<ul style="list-style-type: none"> <li>Offensive jokes or inappropriate gender-related remarks in the lab or classroom.</li> </ul>	X	
<ul style="list-style-type: none"> <li>Disrespect of abilities, based on sex (e.g., she got into that program because they're saying "we need more women").</li> </ul>	X	
<ul style="list-style-type: none"> <li>Unfair grading, based on sex.</li> </ul>		X
<ul style="list-style-type: none"> <li>Other inappropriate gender-related conduct or actions.</li> </ul>		X
9. The Department or Program has support organizations dedicated to gender equity, e.g., women in science and engineering.	X	

**Analysis:**

NASA and NSF's assessment of the broader learning environment, including classroom and lab experiences, reveals several concerns among students and faculty relating to climate. These concerns may be indicative of environmental issues that could negatively impact the program. Caltech needs to address the issues for these reasons, which are discussed in more detail below.

Some faculty members interviewed noted that, in both their advising and teaching roles, they have observed women in the program, more so than men, sometimes lacking confidence in their own abilities. Several faculty members reported that male students tend to be over-confident while female students tend to underestimate their abilities. Some faculty members interviewed also reported that, in their estimation, male students tend to talk over female students and take over the lead on projects and the use of equipment.

Some female students interviewed reported hearing other students occasionally make sexist jokes, comments about their appearance and what they wear, and comments such as "you only got this or that because you are a woman." The Title IX Compliance survey results provided additional insight regarding the program environment (see Tables 3 and 4).<sup>40</sup> For instance, male respondents were more likely than female respondents to agree their instructors treat them with respect, while female respondents were more likely to state that they had "sometimes," "often," or "almost always" been treated differently. A greater number of female than male respondents also stated that someone in their program had made unwanted attempts to establish a romantic or sexual relationship with them "sometimes" or "often," despite their efforts to discourage it (see Table 3 below). These survey responses raise concerns regarding the possible presence of harassing conduct in the program environment that Caltech and PMA need to address, in part through a comprehensive Title IX self-evaluation and associated interventions (see Recommendations below).

Another concern raised in interviews was the lack of female faculty and gender diversity when it came to presentations and speakers at PMA events. Students and faculty members were concerned that the lack of female role models may have an adverse impact on how welcoming the Caltech environment may feel to female students. Some faculty members mentioned that there is an active effort being made to recruit more female faculty members, but that the process was cumbersome due to the lack of flexibilities they have to offer candidates, such as jobs for spouses and affordable childcare.

We also note that, with regard to the written candidacy exams, there are discrepancies between male and female outcomes in Physics and Math (see Table 5). For example, in Math, 73 percent of men passed the

<sup>40</sup> The NASA Shared Services Center conducted the online Title IX Compliance survey during the period of October 4-20, 2017. All PMA graduate students, undergraduate students, and post-docs were invited to participate in the survey. The response rate was 24 percent, with 103 surveys completed.

Algebra exam on the first try, compared to only one of the three women who took the exam. PMA needs to conduct a deeper analysis on this issue, as recommended below.

**Table 3. Title IX Compliance Survey Questions: Academic Environment**

Questions	Number of Responses to Question	Percent Responding:		
		Never or Rarely	Sometimes	Often or Almost Always
<i>How often have you experienced: Instructors treat all students with respect?</i>	Male: 55	0%	5.5%	94.5%
	Female: 42	0%	7.1%	92.8%
<i>How often while in your current program have you been in situations involving individuals in your Academic program, where one or more of these individuals (of either gender) ...</i>	<b>Number of Responses to Question</b>	<b>Never or Rarely</b>	<b>Sometimes</b>	<b>Often or Almost Always</b>
... Repeatedly told sexual stories or jokes that were offensive to you?	Male: 56	92.9%	7.1%	0.0%
	Female: 43	74.4%	<b>18.6%</b>	<b>7.0%</b>
... Treated "differently" because of your gender (e.g., Mistreated, slighted, excluded, or ignored you)?	Male: 56	98.3%	1.8%	0.0%
	Female: 43	60.5%	<b>25.6%</b>	<b>14.0%</b>
... Made unwanted attempts to establish a romantic or sexual relationship with you despite your efforts to discourage it?	Male: 56	98.2%	1.8%	0.0%
	Female: 43	79.1%	<b>11.6%</b>	<b>9.3%</b>
... Made you feel threatened with some sort of retaliation for not being sexually cooperative?	Male: 56	100%	0.0%	0.0%
	Female: 43	93.0%	<b>4.7%</b>	<b>2.3%</b>
... Touched you in a sexual way that made you feel uncomfortable?	Male: 56	100%	0.0%	0.0%
	Female: 43	95.4%	<b>2.3%</b>	<b>2.3%</b>
... Implied better academic opportunity or better treatment if you were sexually cooperative?	Male: 56	100%	0.0%	0.0%
	Female: 43	100%	0.0%	0.0%

Note: Numbers in **red** indicate questions for which there appears to be a considerable difference in responses between males and females.

**Table 4. Title IX Compliance Survey Questions: Taken Seriously in the Classroom**

Questions	Number of Responses to Question	Percent Responding:			
		Not at All/ Very Little	Some-what	To a Great Extent	N/A
<i>In your department, to what extent do you feel that your suggestions or comments in the classroom are taken seriously by:</i>					
... Male faculty members?	Male: 55	1.8%	20.0%	58.2%	20.0%
	Female: 42	7.1%	28.6%	52.4%	11.9%
... Female faculty members?	Male: 55	0.0%	18.2%	58.2%	23.6%
	Female: 42	2.4%	19.0%	54.8%	23.8%
... Male student peers?	Male: 55	1.8%	10.9%	67.3%	20.0%
	Female: 42	<b>14.3%</b>	<b>30.9%</b>	42.9%	11.9%
... Female student peers?	Male: 55	1.8%	12.7%	65.5%	20.0%
	Female: 42	0.0%	21.4%	59.5%	19.1%

Percentages do not equal 100% due to rounding. For comparative purposes, these categories have been added together: "Never" and "Rarely;" "Often" and "Almost Always;" and "Not at All" and "Very Little." Numbers in **red** indicate questions for which there appears to be a considerable difference in responses between males and females.

**Table 5. Written Candidacy Exam Results, by Gender: 2012-13 through 2016-17**

PMA Program	Exam Portion	No. Taking Exam		% of Passing Exam on First Attempt	
		Male	Female	% Male	% Female
Physics	Classical Physics and Electrodynamics	97	16	89.7%	<b>68.8%</b>
	Quantum and Statistical Mechanics	94	15	89.4%	<b>53.3%</b>
Mathematics	Algebra	26	3	73.1%	<b>33.3%</b>
	Analysis	14	3	100.0%	<b>66.7%</b>
	Topology/Geometry	19	3	94.7%	<b>66.7%</b>
Astrophysics	Astronomy	--	--	100.0%	100.0%

In Mathematics, there are three written candidacy exams; students must pass at least 2/3 of the exams and earn at least a B in the course series corresponding to the exam they did not take. Caltech did not provide the raw numbers for the Astronomy exam, but informed us that all students who attempted the qualifying exam passed on the first attempt.

*b. Parental/Marital Status (“Family Friendly” Policies)*

<i>Review Criteria: Marital and Parental Leave Policies</i>	<i>Yes</i>	<i>No</i>
1. The institution has a separate leave policy that addresses parental/family status.	<b>X</b>	
<ul style="list-style-type: none"> <li>If yes, does the parental/family leave policy treat pregnancy and child birth in the same manner as any other temporary disability or physical condition?</li> </ul>	<b>X</b>	
<ul style="list-style-type: none"> <li>If no, does the Program treat pregnancy as a justification for a leave of absence for as long a period of time as deemed medically necessary by the student’s physician and that allows for reinstatement to the status she held when the leave began?</li> </ul>	N/A	
<ul style="list-style-type: none"> <li>Does the policy explicitly cover all members of the University community, e.g., faculty, staff and students?</li> </ul>	<b>X</b>	
2. The Program regularly disseminates information to program participants, including faculty and students, regarding pregnancy-related policies.	<b>X</b>	
3. The individual situations NASA and NSF heard about involving pregnancy indicate that individual faculty members are responding appropriately and consistent with Title IX requirements.	<b>X</b>	

**Analysis:**

Based on NASA and NSF’s onsite interviews and policy review, Caltech’s parental leave policies are consistent with Title IX regulatory provisions. As required, Caltech’s policies cover faculty, students and staff. For example, the University’s pregnancy leave policy provides up to eight weeks of paid leave to graduate students as a consequence of pregnancy, childbirth or related medical conditions. Graduate students are also provided with six weeks of “family bonding leave” without pay.<sup>41</sup>

Further, Caltech provides reasonable accommodations to students with pregnancy-related disabling conditions. Post-docs students are provided a minimum six week paid leave of absence for pregnancy-related disabling conditions with guaranteed reinstatement to their previously held position in postdoctoral

<sup>41</sup> Caltech, Graduate Studies Office, Dean’s Message, December 2015, accessed at <<http://www.gradoffice.caltech.edu/>>.

research. In addition, postdoctoral students are eligible for up to twelve weeks per year of unpaid family care leave after completion of required service at Caltech.

Faculty, students and staff interviewed reported that they were informed of the policies and some have taken advantage of them or known someone who has. Also, a search of Caltech’s website conducted by NASA and NSF yielded several helpful links containing information on pregnancy and parental leave policies for undergraduate students, graduate students, postdoctoral students, and employees.

*d. Safety*

<i>Review Criteria: Campus Safety</i>	<i>Yes</i>	<i>No</i>
1. Students believe the campus is a safe environment (e.g., has a night-time shuttle, police cars on patrol, information dissemination about safety issues)	X	
2. Information on safety policies is disseminated to students.	X	
3. Students are aware of the following safety measures:		
• Night-time shuttle service or escort service	X	
• Regular security/police patrols on campus	X	
• Regular security/police patrols in buildings where students work at night	X	
• Dissemination of information about safety issues	X	
• Controlled-access buildings and labs	X	

**Analysis:**

Overall, NASA and NSF’s review does not suggest concerns around physical safety having limited any student’s program participation based on gender. A majority of students of both genders felt safer on campus than off campus. Among those who participated in the survey, more men than women feel they have no safety concerns on campus (67 percent of men compared to 41 percent of women).<sup>42</sup> Interview responses indicate that several individuals believed campus safety could be improved by having more secured access to PMA buildings and using keycards to log who is accessing the buildings as well as having more patrol cars on campus.

**2. Recommendations**

**a. Further Steps to Address Harassment Concerns and Encourage a Welcoming and Supportive Program Environment.** PMA should work closely with Caltech leadership and the Title IX Coordinator’s Office in further evaluating the results of NASA and NSF’s Title IX survey and in providing education and awareness opportunities to ensure that all faculty, students and staff in PMA, especially those performing teaching or teaching assistant duties, receive tailored training on Title IX and related requirements. The further evaluation regarding the survey results and other aspects of the program environment should be part of a larger Title IX self-evaluation conducted by PMA utilizing NASA’s technical assistance guide on conducting Title IX self-evaluations in STEM.<sup>43</sup> As part of the self-evaluation effort, climate surveys and/or focus groups may be helpful in examining any concerns relating

<sup>42</sup> NASA and NSF, Caltech Title IX Compliance Review Survey Results Report by Gender, Question 12.

<sup>43</sup> NASA, *Title IX and STEM: A Guide for Conducting Title IX Self-Evaluations in STEM*, accessed at <[https://www.nasa.gov/sites/default/files/atoms/files/title\\_ix\\_stem\\_self-evaluation\\_fillable.pdf](https://www.nasa.gov/sites/default/files/atoms/files/title_ix_stem_self-evaluation_fillable.pdf)> While grantees are not obligated to conduct subsequent Title IX Self-Evaluations, they are very helpful to ensure, for example, that selection criteria and academic practices do not adversely impact students on the basis of gender. Self-evaluations also provide an opportunity to monitor trends over time and to develop mechanisms for proactively addressing emerging issues.

to sex-based bias. We also strongly encourage PMA to contact the American Physical Society Committee on the Status of Women and the American Astronomical Society for technical assistance.<sup>44</sup> As recommended in Section II.A, additional training should be provided and designed to resonate with the PMA community by using specific examples, case studies, or scenarios in settings recognizable to a STEM faculty (e.g., in classrooms and labs, and at professional conferences). In addition, to help address the dearth of women role models in the program, PMA should seek to ensure that its colloquia reflect gender diverse participation and that the programs within the Division are supportive of inclusive policies and practices.

**b. Analyze Gender Differences in High Stakes Testing.** PMA should analyze the Division’s high stakes test results to determine why women appear to pass these exams at lower rates than men.

**c. Dissemination of Parental and Family Leave Policies.** The University and PMA should continue disseminating parental and family leave policies on a regular basis to help demonstrate their ongoing support in this area.

### *3. Promising Practices*

**a. Bonding Leave:** Students may take six weeks of family bonding leave without pay, by submitting a personal leave petition to the Graduate Office for approval. Students returning from approved bonding leave return to their academic programs in good standing.

**b. Memorandum of Understanding:** Caltech has a Memorandum of Understanding with the Pasadena Police Department, Santa Monica UCLS Rape Treatment Center, and non-profit group Peace over Violence for a cooperative approach to providing support for victims of sexual violence. Caltech has also implemented a multidisciplinary Sexual Assault Response Team to respond to individuals involved in Title IX incidents and cases.

## III. CONCLUSION

NASA and NSF did not find evidence of non-compliance with Title IX procedural requirements regarding coordination and the content and implementation (in PMA) of Caltech’s Title IX complaints procedures. We do, however, make recommendations to strengthen the communication of the procedures to the academic community, including information on timeframes for filing Title IX complaints directly with federal agencies.

Regarding PMA, NASA and NSF note that there appears to be a sex-based difference in the numbers of women and men choosing to enroll in the graduate Physics and Mathematics programs, compared to those accepted into these programs. We recommend that PMA conduct a careful analysis of women’s choices to not matriculate into these programs to ensure that women are not being discouraged from attending.

In addition, we are concerned about potential biases based on sex and the possible presence of harassing conduct in the program environment based on our limited scope review, particularly the results of our Title IX survey. A few of the survey responses indicate the need for greater efforts to address concerns regarding possible harassing conduct and to create a more inclusive and welcoming program environment. All of the recommended efforts should be part of a Title IX self-evaluation conducted by PMA with the assistance of

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<sup>44</sup> American Physical Society, Committee on the Status of Women, “Women in Physics,” accessed at <<https://www.aps.org/programs/women/>>; American Astronomical Society, “AAS Endorses Vision Statement for Inclusive Astronomy,” July 28, 2016, accessed at <<https://www.aps.org/programs/women/>>.

the Title IX Coordinator's office. NASA and NSF will conduct monitoring on our recommendations no earlier than six months from the date of this report, including a report from Caltech on its implementation of our recommendations.