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May 16, 2019

To: Robert Stacey, Dean, College of Arts and Sciences  
Suzanne Hawley, Divisional Dean of Natural Sciences, College of Arts and Sciences

From: Rebecca Aanerud, Interim Vice Provost and Dean *Rebecca Aanerud*  
Kima Cargill, Interim Associate Dean for Academic Affairs and Planning *Kima Cargill, Ph.D.*

RE: Review of the Department of Physics (2018-2019)

This memorandum outlines the Graduate School's final recommendations from the Department of Physics academic program review. Detailed comments on the review can be found in the documents that were part of the following formal review proceedings:

- Charge meeting between review committee and administrators (May 22<sup>nd</sup>, 2018)
- Self-Study (September 15<sup>th</sup>, 2018)
- Site visit (November 8<sup>th</sup>-9<sup>th</sup>, 2018)
- Review committee report (December 14<sup>th</sup>, 2018)
- Department of Physics response to the report (February 1<sup>st</sup>, 2019)
- Graduate School Council consideration of review (May 16<sup>th</sup>, 2019)

The review committee consisted of:

**Paul Hopkins**, Professor, UW Department of Chemistry (Committee Chair)

**Vikram Jandhyala**, Professor, UW Department of Electrical Engineering, Vice President for Innovation Strategy, UW CoMotion

**Michael Dine**, Professor, Department of Physics, University of California, Santa Cruz

**Frances Hellman**, Professor and Dean, Division of Mathematical and Physical Sciences, University of California, Berkeley

The Department of Physics offers the following degrees: Bachelor of Science, Master of Science, and Doctor of Philosophy.

Members of the Graduate School Council presented findings and recommendations to the full Council at its meeting on May 16<sup>th</sup>, 2019. A summary of this report, composed by Graduate School Council Members, is attached to this document.

Graduate School Council Recommendations

The Graduate School Council commends Department of Physics on the strength of its programs, faculty, and students. After discussion, the Council recommended the following:

- Full academic program review in 10 years (2028-2029)

We concur with the Council's recommendations.

cc: Mark Richards, Provost and Executive Vice President  
Patricia Moy, Associate Vice Provost for Academic and Student Affairs, Office of the Provost  
Blayne Heckel, Professor and Chair, Department of Physics  
Michaelann Jundt, Associate Dean for Undergraduate Academic Affairs  
Becky Corriell, Director, Academic Affairs & Planning, the Graduate School  
Academic Unit Review Committee Members  
Members of the Graduate School Council  
GPSS President

## **Attachment**

University of Washington | Graduate Council

Summary of the review of Department of Physics

**Academic Unit Name:** Department of Physics

### **Degrees/Certificates Included in the Review:**

- Bachelor of Science (BS) in Physics
- Minor in Physics
- Master of Science (MS) in Physics
- Doctor of Philosophy (PhD) in Physics

### **Program Strengths:**

1. The Department offers high quality instructional programs featuring evidence-based instruction in both service courses and in the major at the undergraduate level. Enrollment has grown substantially in both areas over the past 10 years, and admitted students now make strong progress toward matriculation. There is a strong focus by staff on the student experience across all degree programs.
2. The Professional Master of Science Program fills a unique niche, and the program provides a format allowing the option of online learning that broadens the addressable market.
3. The PhD program offers strong mentoring of students with resultantly strong student morale. The Department has made a strong effort to sustain and improve diversity within the PhD Program.
4. The research faculty are a historically strong group (particularly in 2D materials), and Physics faculty have earned two of the seven Nobel Prizes awarded to faculty affiliated with the University of Washington. UW (central) appears to have committed to several future hires based upon a recent retention case.
5. The mix, collegiality, and commitment of the faculty appear strong, and the faculty have tight connections to the UW College of Engineering. Decision-making is collaborative and transparent.
6. The integrated Department culture across faculty, staff, and students is strong and supportive of excellence. The Department has made a strong effort in the face of ongoing diversity challenges and has produced tangible results.
7. The centrally-connected Advancement staff is operating at a high level.

### **Challenges and Risks:**

1. The Department faces a binding budget constraint in the face of declining tenure track faculty size, larger class sizes than standard across the discipline (including in upper division courses), lack of breakout sections in sophomore level courses,

outdated laboratory equipment, ability to balance teaching and research assistantships, recruiting diverse faculty, and space for PhD students.

2. The department does not have a successful model for fundraising, in particular for supporting graduate students and postdoctoral fellows.
3. Recruiting a diverse student population, particularly in the PhD Program, remains a challenge given the lack of a diverse candidate portfolio in pipeline programs.
4. The Department lacks faculty in several experimental research areas that would complement and strengthen existing research.
5. Faculty in key areas—particularly in theoretical as opposed to experimental physics—are nearing retirement. This will leave gaps in several key instructional areas and research fields if not addressed.
6. Advancement efforts and staffing at the Department level are below what is required to sustain excellence.

#### **Areas of concurrence:**

1. The Department and Review Committee exhibit broad general agreement across most program strengths and challenges.
2. The Department noted a small number of factual misunderstandings and/or misinterpretations of existing conditions (e.g., organizational structures), but none seem material.
3. The Department—during the period in which the Review Committee was preparing its report—acted to make the physics major “capacity-constrained.” This goes against the inclination of the Review Committee, though the change was made at the request of the Office of the Dean of the College of Arts and Sciences, and in consultation with the Dean.
4. The Department disagrees with the logic of using PhD students to staff Professional Master of Science courses given that students are believed to value courses taught by tenured research faculty as well as the research opportunities this model affords students.

#### **Graduate School Council Recommendations:**

1. The Graduate School Council recommends continuing status for all UW Department of Physics degree programs with next review taking place in 10 years.