

UCC Program Review Committee Summary of Review

Program: Physics and Astronomy

Date of last review: AY 2015-2016

Date of this review: AY 2022-2023

The program offers the following degrees, minors, and certificates:

- Ph.D. in Physics
- M.S. in Physics
- M.A. in Physics
- B.A. in Physics
- B.S. in Physics
- B.S. in Applied Physics
- B.S. in Astrophysics
- B.S. in Meteorology
- Minor in Astronomy
- Minor in Physics

Recommendation: This program is found to be viable.

See report for commendations, concerns, and recommendations.

The report was forwarded to the program director and college dean. Their responses are attached.

The Graduate Council's comments are included as well.

External Review of the Department of Physics and Astronomy of Ohio University

December 2022

Executive Summary

Introduction

We, the review team consisting of Howard Jackson, Professor of Physics, the University of Cincinnati, Sherry Yennello, Professor of Chemistry, Texas A&M University, Macario Llamas Assistant Professor of Instruction, John Cotton, Associate Professor of Mechanical Engineering visited the Physics and Astronomy department on December 1 and 2, 2022. A complete self-study with both data and a nuanced narrative had been supplied to the members of the review committee well in advance of the site visit. Additional supporting documents requested during the visit were provided promptly. A schedule for the site visit included meetings with department leadership, faculty, staff, graduate and undergraduate students as well as the Dean of Arts and Sciences, the Vice President for Research, and the Provost. Our unanimous judgment after full consideration of all of the information from the self-study and two days of extensive discussions with members of the department is that Ohio University's Department of Physics and Astronomy is *viable*. We support our conclusion in the various relevant domains in the paragraphs below and, following this executive summary, provide a narrative which demonstrates with detailed evidence the excellence found in multiple areas as well as providing several considerations for the future.

The program globally

The program as a whole has many strengths including nationally and internationally prominent programs in nuclear physics and condensed matter physics; these two programs comprise a large majority of the faculty. The department also offers a degree in a smaller program, astrophysics, and an undergraduate concentration in biophysics. We briefly discuss each of these programs.

The nuclear physics group has a strong, internationally-visible research program, bringing in over \$3M in federal funding in 2022. While some faculty are involved in experiments at national user facilities, the local accelerator gives the group a unique facility and opportunity to involve both undergraduate and graduate students in forefront nuclear physics research. The accelerator, and its unique neutron beam capabilities, also attracts groups from throughout the US to OHIO to carry out research. One example of this was the measurement that elucidated the formation of carbon, a building block of life, carried out by a collaboration of OHIO, Washington University in St Louis and Texas A&M University scientists and students. This important work was highlighted in Scientific American and is featured on the DOE Office of Science webpage as a Science Highlight. The accelerator is also utilized for materials science research. OHIO is a founding member of the Association of Research at of University Nuclear Accelerators (ARUNA), which was recently featured in the Nuclear Physics News International. The nuclear theory efforts are led by international respected researchers and compliment the experimental efforts. This is an outstanding group from every perspective, e.g. directing students, continuing to elaborate their external collaborations, attracting significant external funding, with a notable publication record contributing to the scientific enterprise in this area.

The condensed matter group, the second large program in the department, also has a strong and productive research program with, as in the nuclear area, directing students, attracting significant external funding, and with a notable publication record contributing to the scientific enterprise in this quite separate area. Unlike nuclear physics which has a central foundation in a shared facility, experimental condensed matter researchers each develop their unique facilities while sharing some common facilities or infrastructure. An example of the development of a unique facility which enables the exploration of unique physics, is Prof. Art Smith who has developed uses of molecular beam epitaxial growth combined with scanning tunneling microscopy, all done in-situ, to explore both metals and semiconductors resulting in widely cited publications. In a larger sense, the condensed matter group includes distinguished faculty both in theoretical and experimental research and each connected to the exploration of semiconductors. Not only does this attract significant undergraduate and graduate student interest, but also attracts external funding. Furthermore, as we will briefly touch upon below, this work has an important and exciting connection to the recent Intel investments in Ohio.

The department's third, degree awarding, research program, astrophysics, now has only two faculty members through circumstances outside the department's control. Both undergraduate and graduate student interest in this area is high. A concern is how the present faculty can teach the necessary courses, sustain funded research programs, and supervise undergraduate and graduate students. The department must develop a plan to both cover all of the courses and provide the advising and mentorship for the students who seek research opportunities. A likely part of this plan will be an increase in the faculty in this area.

Collectively, the department contributes strongly to Ohio University's recent R1 status with very strong research productively in terms of publications, supervision of students, and with their current ~\$4M/year in external funding, which is some 36% of the total external funding within the College of Arts in Sciences.

The Graduate Program

The graduate program in the department is strong and thriving with strong foundational elements including research opportunities for the summer after the first year, a notably early experience that the review team found worthwhile. Progress of each student is monitored closely, although with some difficulty without adequate staff support. The present time to the PhD, 6.2 years, is healthy. The size of the graduate program is appropriate for the present size of the faculty and, using a combination of external funding support and teaching assistantships supplied by the university, all of the graduate students are presently supported. The university provides only limited support of their health care costs and the students are required to pay significant fees; in addition, the present stipends provided by the department are not seriously competitive which results in losing some admitted students to other universities. The department may wish to explore ways to address these financial concerns. Recent PhD graduates have been successful in finding employment as post-doctoral associates and in a variety of corporate circumstances. Our review team was impressed by the leadership of the active graduate student association and will comment on a remarkable graduate student DEI initiative below.

The Undergraduate Program

The undergraduate majors program has attracted students whose initial interests are strongly in the astrophysics area. Several commented that OHIO's astrophysics program was key to their choice of enrolling in OHIO. The number of majors is relatively small and attrition from the

program has been connected to their math preparation. The department has an explicit plan to address the math preparation challenges. In addition, the department has begun to incorporate “Python”, a widely used computer language in the teaching of their courses thus preparing students for the future use of that in both academic and corporate jobs. The HTC is a major attractor of students. The HTC students we met were impressive, but attrition seems to be large. The department should use care in choosing the tutorial faculty. The undergraduate students have ample supervised research opportunities both within the academic year and during the summer. The undergraduates have an active SPS (Society of Physics Students) organization.

Departmental Leadership and Departmental Issues

The faculty in the department carry out not only research and research supervision, of course, but also have both teaching and service responsibilities. The listing provided by the department self-study of the service activities of the faculty was truly impressive. This faculty contributes at the department level, the college level, and the university level. The largest part of the teaching responsibilities of the faculty is in providing foundational first year courses, e.g. for the College of Engineering first year undergraduate students. Several of the faculty were aware of and using active learning modalities, like the use of class response software known to enhance student learning. It was unclear, however, whether the use of active learning was widespread. The undergraduate service load has decreased over several years no doubt in part because of the decrease in enrollments at the university. We urge the department to look into this data in detail including DWF rates (by gender, by URM or first generation status, et al.) as these may be correlated to what teaching methods were utilized. This exploration might well inform changes which could result in an increase in student success and retention. Diversity, Equity, and Inclusion issues are active issues of concern among the faculty and students. The faculty have joined a national initiative and regularly invite DEI themed outside speakers, but do not seem uniformly engaged. The graduate student organization, however, has provided remarkable leadership in developing a DEI program that is now regularly presented to incoming graduate students at orientation.

We would be remiss to not mention the challenges of the university’s reduced/centralized support staffing. The staff’s morale is exceedingly low and the reduced service available to the department has required faculty to be performing tasks that they are not well-qualified to carry out and thus taking significant time from their central responsibilities of research, teaching, and service. If this situation is not remediated OHIO risks losing some of their technical staff that may be very difficult to replace. We also noted that the intellectual property office is presently regarded as “unfriendly to industry.” This could be corrected by emulating other IP offices at other universities in the state.

The department recently has selected a new Chair and thus it is timely and appropriate for the department to engage in developing a realistic, widely discussed and approved, long range planning document with a vision for the future of the department that addresses the impact of upcoming retirements expected, the use of differential teaching loads, the effects of Ohio’s College Credit Plus program, the consideration of the Astrophysics needs and how to address them, the role of biophysics in the future, the role of Applied Physics and the recently passed “chips act,” and the anticipated interactions with Intel, which could change the external funding landscape for the semiconductor group.

Review Narrative

We now provide a more detailed descriptive narrative of our observations and judgments provided previously in summary form in the Executive Summary section. We will be guided by the explicit “Suggested Questions for Reviewers” provide us by OHIO. We organize the narrative by addressing in order, the program as a whole, the undergraduate program, the graduate program, areas of concern, recommendations, commendations, and our overall judgment.

The Program as a Whole

The program as a whole has many strengths including nationally and internationally prominent programs in nuclear physics and condensed matter physics; these two programs comprise a large majority of the faculty. The department also offers an undergraduate degree in a smaller program, astrophysics. We first respond to each of the “Suggested Questions for Reviewers.”

a. Is the current number and distribution of faculty sufficient to carry out the broad overall mission of the unit (Teaching; Research, Scholarship and Creative Activity; Service)?

The current number and distribution of the faculty is sufficient to carry out the broad overall mission of the unit with the notable exception of the Astrophysics program. Due to circumstances beyond the department’s control, the number of astrophysics faculty has been reduced to 2. We list this as an area of concern that needed to be addressed by the department.

b. Is the level of the unit’s RSCA appropriate for the program given the size of the faculty and the resources available to the unit? Is the unit’s level of external funding at an appropriate level?

The department as a whole has many strengths including nationally and internationally prominent programs in nuclear physics and condensed matter physics as well as a smaller program astrophysics. Their productivity, or the unit’s RSCA, was well-documented in the department’s self-study and is exceptionally strong. The level of external funding was also strong, with ~\$4 million last academic year, ~36% of the collective external funding in the College of Arts and Sciences.

c. Is the level of service, outside of teaching, appropriate for the program given its size and the role that it plays in the University and broader communities it interacts with? Is the unit able to fulfill its service mission?

The department has carefully documented its service activities which span the full range from the department to the college to the university to the national disciplinary level. They fully satisfy their service responsibilities and by all indications the faculty are sought out for leadership responsibilities.

d. Does the unit have an appropriate level of financial resources, staff, physical facilities, library resources, and technology to fulfill its mission?

The financial resources are not competitive in the areas of Graduate Stipends or coverage of medical insurance. The physical facilities, notably the Clippinger Laboratories, are presently under construction and will provide excellent newly renovated facilities. Following the firing/centralizing of the staff in response to a financial crisis, the present staff is overworked and has a morale crisis. The staffing is inadequate which results in faculty carrying out inappropriate administrative tasks. Previously staffed outreach (Physics Day, Observatory nights) and recruitment has been curtailed due to faculty and staff reductions. We list staffing as an area of concern below.

The Undergraduate Program

The undergraduate majors program has attracted students whose initial interests are strongly in the astrophysics area. Several commented that OHIO's astrophysics program was key to their choice of enrolling in OHIO. The number of majors is relatively small and attrition from the program has been connected to their math preparation. We first respond to each of the "Suggested Questions for Reviewers."

a. Is the unit fulfilling its service role, adequately preparing non- majors for future coursework and/or satisfying the needs for general education?

The department adequately prepares non-majors for future coursework and offers a number of courses that allow students to satisfy general education requirements.

b. Is the program attracting majors likely to succeed in the program? Is the number of majors appropriate for the program? Is the program attracting a diverse group of students?

The majors program and the associated HTC program have attracted a modest number of students who are diverse by gender the majority of whom have articulated initial interest is in astrophysics. The attrition is higher than desirable largely because of math preparation. The department has a specific plan to address the math preparation challenge. The numbers in the program could grow substantially without straining present resources. Applied physics may be a route to achieving the desired increased enrollment.

c. Does the undergraduate curriculum provide majors with an adequate background to pursue discipline-related careers or graduate work following graduation?

The department has documented that ~50% of their graduates pursue graduate school and ~50% obtain jobs that draw on their disciplinary training in the corporate sector. Students are offered summer research opportunities within the department with financial support that gives them experiential learning that is beneficial to their ability to move into corporate or academic labs after graduation. This aspect of the undergraduate program is highly commendable. Students seemed less aware of external opportunities, including REUs and corporate internships.

d. Are the resources and the number of and distribution of faculty sufficient to support the undergraduate program?

The faculty currently supports their undergraduates both with classroom efforts as well as research opportunities. The interest in Astrophysics, however, may well overwhelm the existing astrophysics faculty (currently numbering only 2). The astrophysics program challenges are articulated below under the areas of concern.

e. Are pedagogical practices appropriate? Are program learning outcomes adequately assessed?

Many, but not all, of the faculty are aware of and using modern pedagogical practices including active learning modalities. The learning outcomes of both undergraduates and graduates are carefully assessed. Program learning outcomes in the large service courses are not obviously assessed. The new undergraduate advising is “complicated” for physics and many of the students are told to go to engineering.

f. Are students able to move into to discipline-related careers and/or pursue further academic work?

As remarked above, the department has documented that ~50% of their graduates pursue graduate school and ~50% obtain jobs that draw on their disciplinary training in the corporate sector.

The department’s self-study articulated a number of “Recommended Improvements for the Next Seven Years” (p37-38) all of which are directly relevant to enhancements in their current undergraduate majors program. These enhancements include requiring a capstone research experience, introducing a “Beginning Math for Physicists” course which will directly address the retention challenges we have remarked on, requiring a computer science course, explicitly encouraging the inclusion of computational exercises in upper level courses, creating sample curricula for specialized physics major options, and building connections with other departments for potential interdisciplinary education. The review committee views each of these goals as appropriate; these changes will indeed enhance their undergraduate majors program.

The Graduate Program

The graduate program in the department is strong and thriving with strong foundational elements including research opportunities for the summer after the first year, a notably early experience that the review team found worthwhile. Progress of each student is monitored closely, although with some difficulty without adequate staff support. The present time to the PhD, 6.2 years, is healthy. The size of the graduate program is appropriate for the present size of the faculty and, using a combination of external funding support and teaching assistantships supplied by the university, all of the graduate students are presently supported. We first respond to each of the “Suggested Questions for Reviewers.”

a. Is the program attracting students likely to succeed in the program? Is the number of students appropriate for the program? Is the program attracting a diverse group of students?

The department is attracting students likely to succeed and has in place several routes to the successful completion of the PhD. The number of students is appropriate to the program with the faculty numbers to support and supervise those students with the possible exception of the astrophysics focus which we remark on under areas of concern. No information was supplied on the diversity of the graduate students.

b. Does the graduate curriculum provide an adequate background to pursue discipline-related careers following graduation?

The department has documented that ~50% of their graduates pursue academic posts (e.g. postdoctoral training) and ~50% obtain jobs that draw on their disciplinary training in the corporate sector. One of us (SJY) currently employs two OHIO PhD's who contribute mightily to the operation of the Texas A&M Cyclotron Institute.

c. Does the program provide adequate mentoring and advising to students to prepare them for discipline-related careers?

Nearly all faculty in the department advise graduate students and students reported satisfaction with mentoring, with a few exceptions. Placement of graduates reported in the self-study seems evident that the preparation is strong. The Physics and Astronomy Alumni Nights are appreciated by the graduate students as mechanisms for learning about the variety of careers that are possible. Some graduate students indicated that they would like to know more about careers that are possible with a MS degree.

d. Are the resources and the number of and distribution of faculty sufficient to support the graduate program?

The substantial resources and number and distribution of the faculty are sufficient in both the nuclear and condensed matter area with, as already mentioned, some concern in the astrophysics area.

e. Does the program offer appropriate financial support to graduate students?

The graduate students are largely supported as teaching assistants in the first year and transition to research funding (e.g. largely external grant funds) in the second or third year. Currently all the graduate students are supported. There are a few students who remain on departmental funds throughout their graduate career. However, the graduate student stipends are not competitive and the partial supported medical cost inadequate.

f. Are program learning outcomes adequately assessed

The department regularly assesses the learning outcomes of their graduates. The fact that the graduates are receiving both postdoctoral and corporate offers is also direct evidence of the program's effectiveness. Some graduate students reported that "knowing how you are doing in classes is not straightforward". The implications of getting below a 3.2 or 3.0 in the first year courses should be understood by the incoming graduate students.

g. Are students able to move into to discipline-related careers?

As remarked above, the answer is clearly "yes."

Areas of Concern and Recommendations

The review team also identified several areas of concern, areas that need attention from department or from the university or perhaps collaboratively from both. We have combined our concerns with suggestions for first steps that might be carried out, but local considerations should of course be respected. We first identify issues that have a large university component and then issues that have a large departmental component.

University issues of concern

- **Astrophysics program**

Both undergraduate and graduate student interest in this area is high. A concern is how the present faculty, now down to two members, can teach the necessary courses, sustain funded research programs, and supervise undergraduate and graduate students. The university and the department must develop a plan to cover all of the courses and provide the advising and mentorship for the students who seek research opportunities. A likely part of this plan will be an increase in the faculty in this area. The department has the responsibility of helping craft a plan that may have initial steps that help distribute the astrophysics efforts and might consider using non-tenure faculty in addition to a future tenure line hire.

- **Graduate student stipends and medical insurance coverage**

The department's graduate students receive stipends that are not competitive. The recently implemented partial medical insurance coverage (~60% of the cost) is also not competitive. Additionally, the students are required to pay significant fees. In practice that means some talented potential graduate students simply choose to go elsewhere. The department head participates in the "Midwest Physics Heads" organization that has current data on graduate student stipends. The department head should provide that data for universities comparable to Ohio University and help develop a plan for improvement. This plan should include both the overall level of support and the distribution throughout the year, as the committee heard both of paycheck gaps and lower stipends in the summer.

- **Staff support**

In response to a financial crisis the university has down-sized and centralized staff support. The staff's morale is exceedingly low and the reduced service available to the department has required faculty to perform tasks that they are not well-qualified to carry out and thus taking significant time from their central responsibilities of research, teaching, and service. Additionally, the staff are frustrated by BobcatBuy, with multiple staff members telling us of buying stuff (~\$100-\$200/yr) from Amazon or Ebay out of their own pocket. If this situation is not remediated OHIO risks losing some of their technical staff that may be very difficult to replace.

- **Faculty salaries**

The committee was not given data on faculty salaries, but dissatisfaction with low salaries came up multiple times during our visit, and appears to be a contributing factor to

the loss of an outstanding mid-career faculty member. We heard various ideas about possible fixes. The committee strongly encourages the university to find ways to reward high-performing faculty as it is usually more cost effective to be proactive about faculty retention than waiting to have to make a counteroffer or a replacement hire.

- **Responsive intellectual property office**

We also noted that the intellectual property office is presently regarded as “unfriendly to industry.” Addressing this concern across the university could well lead to increased industry funding. This may become a high priority with the recent and likely continuing investment in OHIO by Intel. Examples of policies that are more friendly to industry can be found in the IP offices of other universities in the state.

Departmental issues of concern

- **Undertake efforts to increase the number of undergrad majors and attrition issues**

The number of majors is relatively small and attrition from the program has been connected to their math preparation. The department has an explicit plan to address the math preparation challenges and should carry that out. Recruitment is an issue that has been affected by the staff contraction but nevertheless should be revisited with existing resources. The previously held departmental open houses and star parties should be revisited, again recognizing the limited resources.

- **Data from the large service courses should be analyzed**

The department provides significant service to the university with its first year service courses and makes efforts to make such courses well-taught. We suggest the department to look into this data from these courses in detail including DWF rates (by gender, by URM or first generation status, et al.) as these may be correlated to what teaching methods were utilized. This exploration might well inform changes which could result in an increase in student success and retention.

- **DEI efforts should be addressed more coherently**

The department presently has a variety of commendable efforts in addressing diversity, equity, and inclusion issues all of which should be continued. These issues need to be more coherently organized with more attention to active faculty participation in these activities. The committee heard incidents of bullying; the department needs to address these issues.

- **Need for a departmental long range plan**

As noted in the Executive Summary, the department recently has selected a new Chair and thus it is timely and appropriate for the department to engage in developing a realistic, widely discussed and approved, long range planning document with a vision for the future of the department that addresses the impact of expected retirements, the use of differential teaching loads, the effects of Ohio’s College Credit Plus program, the consideration of the Astrophysics needs and how to address them, the role of biophysics in the future, the role of Applied Physics and the recently passed “chips act,” and the anticipated interactions with Intel, which could dramatically transform the external funding landscape for the

semiconductor group. Such a plan should take into account how the department can contribute to Ohio University maintaining status as an R1 institution.

Commendations

- Ohio University's Department of Physics and Astronomy has a notably strong and productive research program. The productivity is reflected in their record of publishing in refereed journals some 1000 papers since the last departmental review. In the past year alone, the work of the faculty has been cited >10,000 times by other scientists.
- The quality of the work is also reflected in their continued success in garnering external funding in an increasingly competitive environment, more than \$4M in the last year. In addition, nine individual members of the faculty have been recognized by election to fellowship in the American Physical Society, a signal honor.
- The departmental committees, notably the Undergraduate Committee and the Graduate Committee are well-functioning, a necessity for a successful department.
- The early involvement of the department in successfully obtaining initial funding from Intel Corporation, who have initially committed ~\$20B in new state of the art fabrication facilities in Ohio, for education/work force efforts is commendable. This initial funding, as well as an additional research grant, positions the department for significant future research investment. Intel's investments along with congress' passage of the "Creating Helpful Incentives to Produce Semiconductors and Science" also known as the "CHIPS and Science act," should provide exciting grant opportunities for the condensed matter group.
- The Graduate Program is thriving with evidence of strong supervision of PhD students, and strong funding, resulting in a time-to-degree average of 6.2 years. Apparently, every recent PhD graduate is now using their physics training in various academia or corporate settings.

Overall Judgment

Each of four reviewers have read this report in full and supports the comments and recommendations contained within this report. The unanimous overall judgment of the Review Committee is that the program of the Department of Physics and Astronomy is *viable*.

Respectfully submitted by the Review Committee Team,
John Cotton (Ohio University), Howard Jackson (University of Cincinnati),
Macario Llamas (Ohio University, Cleveland), Sherry Yennello (Texas A&M University),

Synoptic bios of the two external reviewers

Howard Jackson, University of Cincinnati

Professor of Physics and Distinguished University Teaching Professor

Research Area: Condensed Matter Physics and the Scholarship of Teaching and Learning

~300 journal publications with ~7000 citations; h-index of 47

National Science Foundation funding in both condensed matter research and the scholarship of teaching and learning areas

Former Vice President for Research and University Dean of the Graduate School

Former National Science Foundation/ Council of Graduate Schools Dean-in-Residence

Provost Faculty Career Award for excellence in teaching, research, and service.

William Fowler Award for Distinguished Research in Physics

Fellow of the American Physical Society

Sherry Yennello, Texas A&M University

Regents Professor of Chemistry

Director, Cyclotron Institute

Bright Chair in Nuclear Science

Research areas: Nuclear Physics; Access & Equity in Higher Education

~300 journal publications with ~10,000 citations; h index of 50

Currently >\$10M in federal research annually (NSF, DOE, NNSA, DOD)

ACS Glenn T. Seaborg Award for Nuclear Chemistry

ACS Francis P. Garvan – John M. Olin Medal

Fellow of the American Physical Society

Fellow of the American Chemical Society

Fellow of the American Association for the Advancement in Science

To: Bärbel Such, Chair, UCC Program Review Committee

From: Eric Stinaff, Chair, Department of Physics & Astronomy

Date: January 3, 2023

Subject: Response to the Site Review Committee' Report of the Department of Physics & Astronomy seven-year review.

Thank you for forwarding the reviewers' report to me. The Department appreciates the effort the reviewers put into this review and thanks them for their Commendations and Recommendations. I would like to take this opportunity to respond to some of the "Departmental issues of concern".

Undertake efforts to increase the number of undergrad majors and attrition issues

There is capacity for the department to grow its undergraduate major's numbers and reduce attrition. One of the most promising areas of potential growth may be in Applied Physics or Engineering Physics tied to the arrival of Intel in Ohio and the potential increased interest in STEM degrees. We are actively engaged in Ohio University's funded efforts with Intel through the ASCENT program and will be leveraging this to attract students into Applied/Engineering Physics tracks. While there are limiting factors tied to class sizes in required laboratory courses as well as experiential learning opportunities, typically in the form of directed research. For the laboratory courses we have capacity to increase our majors by ~10/yr and could investigate adding sections if we are able to attract more majors. Experiential learning opportunities are currently limited by faculty capacity where, specifically, we have seen significant interest in Astrophysics research opportunities far exceeding what our two Astrophysics faculty can offer. We are working to find opportunities in related areas and thinking of ways we may be able to engage non-TT faculty, however, these are only temporary fixes and, as with our Astrophysics graduate program, being able to sustainably meet student demand will require investment in TT faculty.

Data from the large service courses should be analyzed

We wholeheartedly agree with this recommendation and will be asking our undergraduate curriculum committee to undertake this task.

DEI efforts should be addressed more coherently

We again completely agree with the committee's assessment. We have a very strong student led effort in this area and will use this momentum to help drive faculty engagement. We will also look to have people from relevant offices within the university come to the department to discuss best practices and inform faculty of available resources.

Need for a departmental long-range plan

As noted by the review committee, with a new chair in the department, the timing for this is excellent. We will be having an advisory committee meeting in early January to discuss this along with all of the recommendations from the review committee and to develop plans to address each of these.



College of Arts and Sciences
Office of the Dean
Wilson Hall, College Green
Athens OH 45701-2979

February 6, 2023

Dear Members of the UCC Program Review Committee,

This is my response to the 2022 report submitted by the Program Review Committee for the programs associated with the Department of Physics and Astronomy. The review notes the high quality of the department's academic programs and the high visibility of faculty members' research programs. The committee also commends the department for their success in obtaining external funds for research, particularly the nuclear physics group and the condensed matter group. The report also notes the Edwards Accelerator Lab and its importance in undergraduate and graduate student research. I congratulate the department and its leadership over the review period on their excellent research and scholarship productivity and student mentoring.

The review committee's report also notes a few areas of concern and some associated recommendations including investigating student retention and success their introductory courses, expanding the number of undergraduate students in department majors and programs, focusing on DEI issues, and addressing staffing concerns.

Assessing Introductory Courses and Expanding Majors

The college strongly agrees with the review committee and department chair's response to consider retention and success data from large introductory courses. Considering how student success and retention, especially among relevant student subgroups, is an important task when evaluating curriculum, pedagogical tools, or other possible supports. Our newly invigorated Center for Teaching, Learning, and Assessment can also be a great resource and provide some expertise in this assessment.

We also strongly support the department and their effort to grow majors in the department. Highlighting the experiential learning available to Physics majors, particularly working with faculty in their labs on research and using facilities like the Edwards Accelerator Lab or working with faculty on research in other national labs is one important aspect of this effort. I also commend the department on their leadership of successful Intel grants; the focus on supporting the emerging semi-conductor industry the region will also serve to highlight the role of physics in our local and state economy and the types of careers available with expertise in the department's programs.

Focusing on DEI Efforts

I also commend the graduate student ed focus on diversity, equity, and inclusion, and agree with the reviewers and department chair that this should be a focus within the department. I am happy to report that the department recently invited, as part of their department, colloquium, Prof. Warren Rogers, a renowned physicist at Indiana Wesleyan University who is engaged in DEIB activities of the American Physical Society. This year the college created the CAS Committee on Inclusive Excellence to focus on promoting inclusion in the college and coordinate with efforts across the university. We Look forward to continuing to work with our colleagues in the department to advance their efforts in this area.

Addressing Staffing Concerns

We recognize the concerns raised in the report the need for more administrative staff support. We are working this year with our elected CAS Faculty Advisory Committee to develop and implement changes to support important college priorities including increased staff support in the college.

I want to thank the review committee for their thoughtful report and to the department faculty and leadership and its leadership for its thorough conscientiousness self-study and commitment to the program review process.

A handwritten signature in black ink that reads "Sarah Poggione". The signature is written in a cursive, flowing style.

Sarah Poggione

Interim Dean

College of Arts & Sciences

Ohio University

From: [Mather, Peter](#)
To: [Such, Barbel](#)
Subject: Graduate Council Program Review
Date: Friday, March 3, 2023 3:31:34 PM

Hi Barbel,

Here is the report to the Graduate Council on the two programs you sent our way. No concerns were raised by the Graduate Council.

Pete

Physics and Astronomy

The Department of Physics and Astronomy offers both master's degrees (M.A. and M.S.) and Ph.D. programs. Overall, the graduate programs are described as "strong and thriving." The review primarily focused on the Ph.D. programs, pointing to success in student completion and post-degree placement. The Graduate Student Association was also highlighted as a strength. Areas of concern included faculty resources for the astrophysics program and competitive graduate funding.

Peter C. Mather, PhD
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If you'd like to make an appointment, please book here: