Physics Summary

Mission:

The Auburn University Department of Physics strives to lead the University in all aspects of its academic mission – teaching, research, service, and outreach – and to leverage that leadership into raising the Department's national and international standing through the careful stewardship of its people, facilities, and resources.

Research:

The Physics Department faculty consists of 23 tenure-track faculty, 5 research faculty, and 3 lecturers. Searches are currently underway for 2 additional tenure-track faculty and one lecturer. The Department currently employs 16 postdoctoral scholars and 2 principal research scientists. The Department is supported by 4 office staff, one Director of Instructional Facilities, and 5 technical support staff. There are currently approximately 140 Physics students split roughly evenly between graduate students and undergraduate majors.

The Physics Department research enterprise is organized across six focus areas:

Plasma Physics: Areas of study include fundamental plasma physics, dusty/complex plasmas, plasma wave creation/propagation and fusion-related plasmas.

Space Physics: Areas of study include magnetospheric physics, solar wind and space weather.

Condensed Matter Physics: Areas of study include wide band gap semiconductors, thin films, thermal diffusion and topological insulators.

Atomic and Molecular Physics: Areas of study include fundamental atomic spectroscopy for astrophysical and plasma applications, cometary atmospheres, ultrafast/attosecond physics, and fundamental atomic/molecular interactions.

Discipline based education research, scholarship of teaching and learning, and instruction: This group is focused on improved student learning at all levels of instruction, including non-majors as well as physics undergraduate and graduate courses.

Biophysics: Areas of study include molecular dynamics through in-silica virtual experiments, vesicle tracking in neurons for physics of cognition, and atomic force microscopy for measuring fundamental protein and other macromolecule dynamics.

Impact:

Below are some highlights of recent advancements and accomplishments within the Department:

- **Extramural Funding:** In the most recent fiscal year, the Department received ~$9M in extramural funding. Physics is a leader across the entire University in extramural funding per faculty member.

Infrastructure Improvements:

- Leach Science Center (LSC) Physics Building (2019) provides small classroom and office space for the majority of faculty, staff, and students
- Astronomy Terrace (2019) provides state-of-the-art telescope facilities for teaching, research, and outreach.
- Theory Laboratory Suite (2022) provides research space for postdoctoral scholars and graduate students in the areas of AMO Physics, Space Physics, Biophysics, and Physics Education Research (funded entirely through indirect cost returns on research grants)
- Renovation of Experimental Support Offices (2021) (funded through indirect cost returns on research grants) LSC Basement Experimental Laboratories (2020-2024) for AMO, Condensed Matter and Biophysics Research

Teaching:

The Department of Physics teaches at three distinct levels with faculty that have won multiple instructional awards. These include:

- Physics for non-physics majors including Physics I and II for Engineers, Physics I and II for pre-health majors, Physics for Aviators, and Introductory Astronomy

- Physics for undergraduate physics majors, including all major subject areas in addition to special topics courses such as physics of music and astrobiology.

- Physics graduate courses including all major subject areas and course sequences specifically designed for graduate students pursuing degrees and careers in our core research areas.

Future Ambitions:

The Department of Physics at Auburn University continues to grow and flourish through increasing student enrollment, increasing extramural funding and scholarship recognized around the world. This growth will continue as we develop partnerships to collaborate in research and teaching, to recruit outstanding graduate students, and find opportunities for our faculty to continue broad world-wide engagement.



Contact:
Allen Landers, Ph.D.
Chair , Department of Physics
334-844-4048
landeal@auburn.edu