



Research Opportunities in Physics at WFU

Focus areas for the department:

Astrophysics/gravitational physics (theory)

Biophysics (experiment and theory)

Condensed matter physics (experiment and theory)

At the Sept. 4th and 11th physics colloquia, you will have the opportunity to hear short presentations from faculty working in each of these areas.



Research Opportunities in Physics at WFU

Presentations on Sept. 4th:

| | | |
|-------------------|---|---------------------|
| Paul Anderson | } | Gravity |
| Greg Cook | | |
| Dany Kim-Shapiro | } | Biophysics |
| Jacque Fetrow | | |
| Keith Bonin | } | Condensed Matter |
| Richard William | | |
| Natalie Holzwarth | | |

Presentations on Sept. 11th:

| | | |
|-----------------|---|---------------------|
| Timo Thonhauser | } | Condensed Matter |
| David Carroll | | |
| Eric Carlson | } | Gravity |
| Martin Guthold | } | Biophysics |
| Jed Macosko | | |
| Fred Salsbury | | |



Research Opportunities in Physics at WFU

Frequently asked questions by undergraduate students:

Question: Why should I consider getting involved with research?

Answer: The department strongly feels that research participation is an important component of your undergraduate education, allowing you to experience and practice the scientific method, and to apply what you are learning to creating new knowledge.

Question: When should I participate in research?

Answer: In general, students can begin research as early as the summer of their freshmen year, depending on the project.

Question: How can I participate in research?

Answer: The [WFU research fellowship program](#) is a great program for summer research. You can also sign up for course credit in PHY 381 and/or 382; some faculty can offer support through their research grants.



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More asked questions by undergraduate students:

Question: How can I pick a research advisor?

Answer: The Physics Colloquia on Sept. 4th and 11th are designed to help you think about the possibilities. There is a lot more information on the [Physics Department Website](#). Once you decide whether you like experiment or theory and like wiggly things (biophysics), inert things (condensed matter), or things out of this world (astro/gravity), talk to several faculty and try to find the best match between what interests you and the existing research efforts.

Question: Can I change research advisors?

Answer: Because of the necessary initial training involved, in general, we encourage students to stick with the research group they have chosen for a year or so before moving on. However, in the past several of our successful students have worked in two different research groups during their four years at WFU.



Research Opportunities in Physics at WFU

Frequently asked questions by graduate students:

Question: When should I participate in research?

Answer: In general, students can begin research immediately, depending on their course and TA commitments. (Of course, RA students have already made arrangements for their research commitments.)

Question: How can I pick a research advisor?

Answer: The Physics Colloquia on Sept. 4th and 11th are designed to help you think about the possibilities. There is a lot more information on the [Physics Department Webpage](#). Once you decide whether you like experiment or theory and like wiggly things (biophysics), inert things (condensed matter), or things out of this world (astro/gravity), talk to several faculty and try to find the best match between what interests you and the existing research efforts.

Question: Can I change research advisors?

Answer: Because of the necessary initial training involved, in general, we encourage graduate students to stick with the research group they have chosen. However, it is possible that your interests may change during the course of your graduate study; in rare case, it may be possible to arrange to join a different research group or to work with two different research groups.



Research Opportunities in Physics at WFU

The following two slides summarize the current research groups in the department divided into experimental and theoretical/computational efforts. You will notice that some groups (such as Professor Thonhauser who just joined the department, and Professors Bonin, Williams, Carlson and Fetrow whose graduate students have left or will soon leave) have particularly small graduate student participation. Research Professor Kerr also intends to help guide some graduate and undergraduate student research projects.

Physics Research Participation – Experimental Physics

| Research Group | Area of research | Current students |
|--------------------------------------|--|--|
| Keith Bonin | Laser and optical physics, biophysics | Sanjay Talluri* |
| David Carroll | Nano-technology | Jerry Kielbasa, Baxter McGuirt, Yuan Li, Jie Liu, Wanyi Nie, Eric Peterson, Alex Taylor* |
| Martin Guthold | Atomic force microscopy; Biophysics | Christine Carlisle, Samrat Dutta, Maggie Baldwin, Alyssa Chang, Patrick Nelli, Calli Nguyen, Eric Roll, David Rosile* |
| Dany Kim-Shapiro | Biophysics | Ivan Azarov, Landon Bellavia, Natalia Azarova, Michael Font, Brad Goetz, Chris Tegeler, Pam Wang* |
| Jed Macosko/ G. Holzwarth | Biophysics | Todd Fallesen, Joel Grim, Matt Steen, Matt Walb* |
| Richard Williams | Solid state and laser physics | Jerry Kielbasa, Kyle Lipke* |

***Undergraduate students**

Physics Research Participation – Theoretical/Computational Physics

| Research Group | Area of research | Current students |
|--------------------------|---|--|
| Paul Anderson | Gravitational physics | Jason Bates, Wilson Cauley* |
| Eric Carlson | Particle physics and astrophysics | Erik Forseth* |
| Greg Cook | Gravitational physics and computational astrophysics | Jason Grigsby |
| Jacquelyn Fetrow | Computational biophysics | Matt Gottbrecht, Katie Flowers, Pam Marcott, Mary Beth Ward* |
| Natalie Holzwarth | Computational materials physics | Graham Lopez, Xiao Xu |
| William Kerr | Solid state physics | |
| Fred Salsbury | Computational biophysics | Brian Kolb, Ye Yuan |
| Timo Thonhauser | Condensed matter theory and materials science | |

***Undergraduate students**