

[View this email in your browser](#)

[Donate to the department](#)



A gratifying return to campus

This is the annual newsletter from the UCR Department of Physics and Astronomy, sent to our extended family of alumni, retired faculty, and friends. Greetings to all and best wishes for your health, safety, and well being !

This past fall marked our return to campus for in-person teaching, following four quarters of remote-only instruction due to covid. It was a great relief to be back on campus, to resume in-person teaching, and to see our colleagues and students. We greatly missed the personal contact with students that was lacking in the online environment. With the spread of the omicron variant towards the end of 2021, the campus reverted to remote-only teaching for the first four weeks of the winter quarter but the disruption to instruction was relatively minor given the previous experience we had gained. Since those initial four weeks, things have returned to normal, although most people on campus are still wearing masks. We are now looking forward to our first in-person graduation ceremonies since 2019, which will be one of the highlights of the year.

Our undergraduate and graduate programs continue to progress. For the fall 2021 class, our graduate program received 274 applications, far more than any other Ph.D. program in our college. An important development in our Ph.D. program is our work to implement a doctoral degree in astronomy. This will allow our astronomy graduate students to earn a Ph.D. in astronomy rather than in physics as is currently the case. They would take a dedicated set of graduate courses specifically tailored to them rather than the set that is followed for a physics Ph.D. This effort has been in the works for a few years.

We hope to obtain final approval for the astronomy Ph.D. in the coming weeks and to have it in place for students by this coming fall. Concerning undergraduates, we are very pleased with our enrollment growth and with the significant number of junior transfer students who now come to UCR to major in physics. The stature of our teaching and research programs continue to grow and our reputational ranking to increase.

This year's Physics and Astronomy graduation ceremonies will be held Saturday June 11. All of you are invited to attend ! We will begin with a hosted lunch in the Physics building at 12:30 p.m. We then move to Chung Hall at 1:30 p.m. for the ceremonies. There will be a keynote speaker followed by the conferral of degrees and awards. We hope you will be able to join us June 11 for the in-person ceremonies.

Best wishes to you and your families,
Ken Barish
Chair and Professor
UCR Physics and Astronomy



UCR Physics and Astronomy by the numbers:

Number of faculty:	45
Number of undergraduate students:	202
Number of graduate students:	122
Number of bachelor degrees awarded in June 2020:	41
Number of Ph.D degrees awarded in June 2020:	12

Recent awards and honors

Prof. Mulligan awarded grant for quantum condensed matter theory

The primary emphasis of Prof. Mulligan's research is the theoretical study of anomalous low-temperature metallic behaviors where

quantum field theory can be used describe the same system in two or more different ways.
<https://physics.ucr.edu/news/2021/12/21/department-energy-renews-quantum-condensed-matter-grant-physicist>



Prof. Wilson named a fellow of the American Physical Society

The APS fellowships recognize individuals who have made significant contributions to their field. It is a highly coveted award accorded to Prof. Wilson, in part, for pioneering techniques and contributions to the understanding of clusters of galaxies and massive galaxies.

<https://physics.ucr.edu/news/2021/12/21/physicist-named-fellow-american-physical-society>



Prof. Arratia receives grant to study atomic nuclei using high energy gamma rays

The grant will support his UCR research team working on the CLAS12 experiment at the Thomas Jefferson National Accelerator Facility.

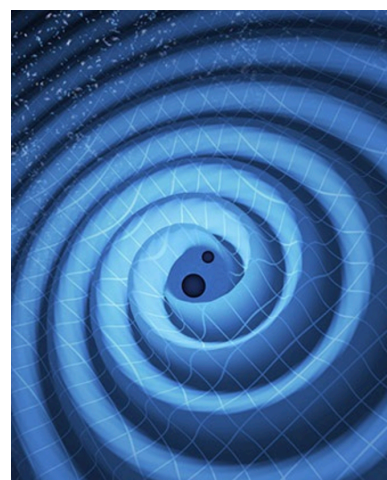
<https://physics.ucr.edu/news/2021/09/24/deep-dive-atomic-nucleus>



Prof. Richardson receives NSF grant for the LIGO gravitational wave detector

The grant will be used to develop novel machine-learning techniques to better understand instrumental noise in LIGO, which currently limit detector sensitivity.

<https://physics.ucr.edu/news/2021/09/24/machine-learning-nsf-grant-will-help-identify-physical-origins-noise-ligo-0>



Prof. Ken Barish receives grant for research on the structure of the proton

The grant from the US Department of Energy will support the activities of the Nucleon Spin Physics Group at UC Riverside.

<https://physics.ucr.edu/news/2021/08/25/department-energy-renewal-grant-supports-student-research-brookhaven-national-lab>



Profs. D'Aloisio, Tanedo, and Wei each win an NSF career award

The highly coveted awards recognize junior faculty who are expected to become leaders in their fields. They are among the most prestigious awards a junior faculty member can receive.

<https://physics.ucr.edu/news/2021/08/25/fourteen-uc-riverside-professors-receive-nsf-career-awards>

Prof. Richardson receives NSF grant to develop instruments for gravitational wave detection

Prof. Richardson is a member of the LIGO collaboration, which has revolutionized the field of cosmology and astrophysics through its detection of gravitational waves.

<https://physics.ucr.edu/news/2021/08/17/physicist-receives-nsf-grant-develop-instruments-gravitational-wave-detectors>

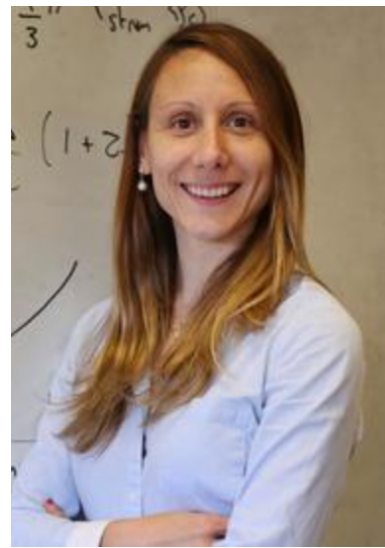


Research news

Prof. Sales leads team in a study of ultra-diffuse galaxies

An international team of astronomers co-led by Prof. Sales used sophisticated simulations to detect ultra-diffuse galaxies, which are dwarf galaxies whose stars are spread over vast regions of space.

<https://news.ucr.edu/articles/2021/09/06/astronomers-explain-origin-elusive-ultradiffuse-galaxies>



Prof. Zandi studies how a virus packages its genetic material

Prof. Zandi and her students have developed a theory and performed simulations that may help to explain how a virus finds its native genome.

<https://physics.ucr.edu/news/2022/05/02/how-virus-packages-its-genetic-material>



Prof. Barton uses physics to explain the transmission effects of different covid mutations

Understanding how specific mutations affect SARS-CoV-2 transmission could help us to better understand the biology of the virus and to control outbreaks.

<https://physics.ucr.edu/news/2022/05/02/using-physics-explain-transmission-effects-different-sars-cov-2-mutations>

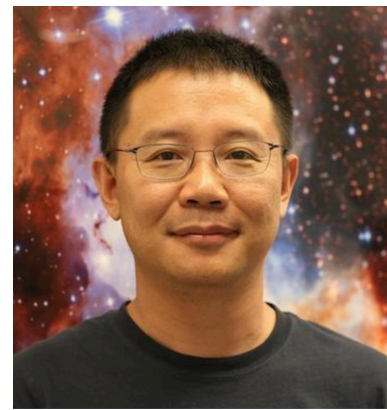


Prof. Yu proposes that collapsing dark matter halos could provide an explanation for massive black holes

Massive black holes many millions or billions

times the mass of the sun are believed to be at the center of essentially every galaxy, but the mechanism for their formation is unknown.

<https://physics.ucr.edu/news/2021/06/16/how-supermassive-black-hole-originates-0>



Prof. Lui's results on Moiré superlattices lead to a new class of electronic excited states

Moiré superlattices, formed by superimposing thin atomic layers of exotic materials, exhibit phenomena not found in the individual layers, opening the door to technological revolutions in electrical transmission, information engineering, and quantum computing.

<https://physics.ucr.edu/news/2021/06/16/trions-exhibit-novel-characteristics-moire-superlattices>



Prof. Tanedo proposes that dark matter particles operate in an extra dimension

His suggestion is that dark matter particles, which make up 85% of the matter in the universe but whose nature is unknown, exert forces on other dark matter particles within an extra dimension in space-time.

<https://physics.ucr.edu/news/2021/06/02/new-dimension-quest-understand-dark-matter>



Prof. Bird uses machine learning to speed up simulations of cosmology

The technology will allow much larger simulations to be performed, which will soon be needed in order to analyze data from the latest-generation astronomical surveys.

<https://physics.ucr.edu/news/2021/05/11/algorithm-helps-speed-simulation-vast-complex->



Invitation to the 2022 Physics & Astronomy Graduate Recognition Ceremony



The Department of Physics and Astronomy

at the

University of California, Riverside

cordially invites you to attend the

Department Graduation Recognition Ceremony

honoring the candidates for the Bachelor of Science, Masters, and Doctoral degrees

Awards to be given

- Robert L. Wild Family Award: Outstanding 1st year undergraduate student
- R. Stephen White Endowed Fund for Physics Award: Outstanding 2nd year undergraduate student
- R. Stephen White Endowed Fund for Physics Award: Outstanding 3rd year undergraduate student
- Brown Williams Undergraduate Student Award: Outstanding senior undergraduate assistant

- Outstanding teaching assistants
- Benjamin C. Shen Memorial Award: Outstanding 1st year graduate student
- Benjamin C. Shen Memorial Award: Outstanding junior graduate student researcher
- Anne Kernan Award: Outstanding senior graduate student researcher
- Robert T. Poe Memorial Scholarship Award for Outstanding Ph.D. Graduate

Saturday June 11, 2022, 12:30 p.m.
(details to follow in a separate email)



Copyright © 2022 University of California, Riverside, All rights reserved.

Want to change how you receive these emails?
You can [update your preferences](#) or [unsubscribe from this list](#).

