



# The Physics Observer

Oct 11, 2022

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## UPCOMING

### EVENTS

**Wednesday, October 12, 2022 - 4:00pm, PAA A-102:**  
[Physics Colloquia](#)  
Armita Nourmohammad,  
University of Washington.

**Thursday, October 13, 2022 - 2:00pm:**  
[Physics Department: General Exam](#)  
Jordan Fonseca (Advisor: Xiaodong Xu), University of Washington.

**Tuesday, October 18, 2022 - 11:00am, CENPA Conference Room 178:**

## Welcome

The Physics Observer is a periodic bulletin of happenings in and around UW Physics. Our goal is to share information of notable happenings, events, and news associated with the department. Please feel free to pass this newsletter to anyone who may be interested. Readers wishing to subscribe, or unsubscribe, may do so [here](#). Previous newsletters may be found on the physics website at [The Physics Observer Newsletter](#). Information for future editions may be sent to the editor, [physrecp@uw.edu](mailto:physrecp@uw.edu).

## Chair's Corner (L. Yaffe)

This year's Nobel prizes were announced last week. The [physics prize](#) went to Alain Aspect, John Clauser and Anton Zeilinger for experiments with entangled photons, establishing the violation of Bell inequalities and pioneering quantum information science. In contrast to many Nobel awards, I would not describe this year's prize as recognizing a discovery. The awardees performed experiments which provided beautiful confirmation of the most fundamental aspects of quantum mechanics. But the quantum entanglement studied in these pioneering experiments is exactly the same quantum entanglement which underlies every covalent bond in chemistry and, for example, the properties of conjugated aromatic hydrocarbons such as benzene or naphthalene. The Nobel prize nicely recognizes the technical achievements of Aspect, Clauser and Zeilinger who demonstrated that it is feasible to prepare, with extremely high fidelity, analogous correlated states of photons and explicitly demonstrate that such states remain entangled as the photons separate (much like a hydrogen molecule which is vibrationally excited to breakup). The ability to engineer such quantum correlated states on demand is a fundamental capability needed in all ongoing efforts to create useful quantum computers.

Last month I noted the departure of a number of physics department staff but I failed to mention Christopher Phillips, who was lured away by a great career opportunity at NSF's [NOIRLab](#) (the National Optical-Infrared Astronomy Research Laboratory), the US national center for ground-based optical and infrared astronomy. We are sorry to lose Christopher but pleased that he found such a good fit for his interests.

## Milestones & Arrivals

- ★ Welcome [Jade Cox](#), the new Introductory Physics Program Coordinator, who joined the department last month.
- ★ Welcome to [Victoria Truswell](#) & [Anagha Nambisan](#), the new Student Assistants at the Physics Front Desk.

Meet our incoming Research Assistant Professors:

- ★ [Dr. Dorota Grabowska](#)
- ★ [Dr. Niklas Mueller](#)
- ★ [Dr. Elise Novitski](#)
- ★ [Dr. Xiaojun Yao](#)

Physics Department:

General Exam

**Heather Harrington**

(Advisor: Alejandro Garcia), University of Washington.

**Monday, October 24th, 2022 - 2:00pm, PAT C-520:**

Physics Department:

General Exam

**Mia Kumamoto**

(Advisor: Sanjay Reddy), University of Washington.

**Monday, October 24, 2022 - 4:00pm, PAA A-102:**

Physics Colloquia: Dark

Universe Science Center

**Renè Hložek**, University of Toronto.

**Tuesday, October 25, 2022**

**- 3:00pm, PAT 610C:**

Physics Department:

General Exam

**John Franklin Crenshaw**

(Advisor: Andrew Connolly), University of Washington.

**Monday, October 31, 2022**

**- 4:00pm, PAA A-102:**

Physics Colloquia

**Ashutosh Kotwal**, Duke University.

**Tuesday, November 8,**

**2022 - 7:30pm, Kane 130:**

Frontiers of Physics:

Understanding our

Universe from Deep

Underground

**Arthur B. McDonald**

(2015 Nobel Laureate in Physics), Queen's University.

## Research Awards & Grants

- ❖ Associate Professor Shih-Chieh Hsu received \$300K from the National Science Foundation for accelerating searches for beyond the standard model physics and the ATLAS pixel detector.
- ❖ Associate Professor Jiun-Haw Chu received \$200K from the Air Force Office of Scientific Research for strain control topological quantum materials.
- ❖ Professor Subhadeep Gupta received \$182K from the Air Force Office of Scientific Research for many-body dynamics of quantum gases in time varying optical lattices.
- ❖ Professor Alvaro Chavarria received \$191K from the National Science Foundation for collaborative research on the search for light dark matter with DAMIC.
- ❖ Professor and Director of CENPA David Hertzog received \$1.5M from the US Department of Energy for experimental nuclear physics.
- ❖ Affiliate Professor Margaret Cheung received \$345K from the National Institutes of Health for principles for tuning target selectivity in signaling proteins.
- ❖ Professor Xiaodong Xu received \$400K from the Air Force Office of Scientific Research for developing a cryogenic magento-optical system with nanomechanical controls of van der waals quantum materials.
- ❖ Professor Jens Gundlach received \$604K from the National Institutes of Health for single-molecule protein sequencing with nanopores.
- ❖ Research Scientist Bryna Hazelton received \$272K from the National Science Foundation for collaborative research on RFI detection across six orders of magnitude in intensity: a unifying framework with weakly supervised machine learning.

## Department Resources & News

- **The Physics Department's annual holiday party will be on Friday December 9, from 4-6pm.**

- Applications are solicited for the Seattle mentoring program of the Association for Women in Science (AWIS), <https://seattleawis.org/mentoring/>, deadline October 20, 2022.

## Assorted Talks & Meetings

- Noon-1:30pm, **October 12, 2022**, Zillow Commons (CSE 691), Amazon Science Internships and Amazon Postdoctoral Science Program, graduate student networking & information event. Register at <https://amazongraduateuw.splashthat.com>.

- **October 15, 2022**, Washington section of the American Association of Physics Teachers (WA-AAPT) fall meeting, Evergreen state college, <https://sites.evergreen.edu/waaapt2022/>.

- **October 20, 2022**, abstract submission deadline for the APS 2023 March Meeting, <https://march.aps.org/attendees-presenters/abstracts>.

- **October 25, 2022**, Department of Energy *summer internship fair*, <https://app.brazenconnect.com/a/orise/e/Y58kW>.

- **December 12-14, 2022**, *Physics of Morphing Matter workshop*, PCTS, Princeton, <https://pcts.princeton.edu/events/2022/physics-morphing-matter>.

Friday, December 9, 2022 -  
3:00pm, Kane  
(Walker-Ames):  
[Autumn QuantumX  
Poster Session](#)  
RSVP ([here](#)).

Friday-Sunday, January  
20-22, 2023:  
[APS Conference for  
Undergraduate Women in  
Physics](#). Applications  
([here](#)) due 2pm October  
31.

## [SOCIAL MEDIA](#)

[Instagram](#)

[Facebook](#)

[YouTube](#)

[Twitter \(@physicsuw\)](#)

[Vimeo](#)

[Pinterest](#)

## Funding Announcements

- Proposals solicited for Washington Nanofabrication Facility (WNF) seed grants, 10K, <https://www.quantumx.washington.edu/research/seed-grants/>, deadline October 15, 2022.
- Pre-proposals solicited for NSF Quantum Sensing Challenges for Transformational Advances in Quantum Systems, 2.5M, limited submission opportunity, <https://depts.washington.edu/research/funding/opportunities/2805/>, internal UW deadline October 26, 2022.
- Pre-proposals solicited for NSF Partnerships for Innovation, 550K, limited submission opportunity, <https://depts.washington.edu/research/funding/opportunities/2804/>, internal UW deadline October 26, 2022.
- Pre-proposals solicited for NSF Major Research Instrumentation (MRI) program, limited submission opportunity, <https://depts.washington.edu/research/funding/opportunities/2803/>, internal UW deadline October 26, 2022.
- Applications solicited for UW Global Innovation Fund research awards, <https://www.washington.edu/globalaffairs/gif/research/>, deadline November 1, 2022.

## Job Opportunities

- Institute for Artificial Intelligence and Fundamental Interactions (IAIFI) [postdoctoral fellowships](#), deadline October 11, 2022.
- APS 2023-2024 [Congressional Science Fellowships](#), deadline December 1, 2022.
- [Assistant professor](#) in biophysics, Johns Hopkins University.
- Multiple [faculty openings](#) in quantum information, materials & sensors, Washington University, St. Louis.
- [Assistant professor](#), California State University San Bernardino.

## Selected Publications

- [How the physics of nothing underlies everything](#), C. Wood, Quanta.
- The low-energy spectrum in DAMIC at SNOLAB, A. Chavarria, <https://arxiv.org/abs/2210.00587>.
- Holographic-(V)AE: an end-to-end SO(3)-equivariant (variational) autoencoder in Fourier space, M. Pun, A. Nourmohammad, et al., <https://arxiv.org/abs/2209.15567>.
- Tunable exciton-hybridized magnon interactions in a layered semiconductor, G. Diederich, J. Cenker, J. Fonseca, D. Xiao, X. Xu, et al., <https://arxiv.org/abs/2209.13744>.
- Report of the Snowmass 2021 topical group on lattice gauge theory, V. Cirigliano, M. Savage, et al, <https://arxiv.org/abs/2209.10758>.
- Report of the topical group on wave dark matter for Snowmass 2021, G. Rybka, et al., <https://arxiv.org/abs/2209.08125>.
- Fundamental physics in small experiments, V. Cirigliano, <https://arxiv.org/abs/2209.08041>.

## UW Coronavirus Response Information

- Current pandemic information on the [UW Covid-19 tracking dashboard](#).