

PHAmily Update

June 2021



A newsletter celebrating student success around PHAS!

Publications

from PHAS students who were first or second author

Aaron Barclay, “Exploring the next step in micro-solvation of CO in water: Infrared spectra and structural calculations of (H₂O)₄-CO and (D₂O)₄-CO”, *Journal of Chemical Physics*, Jan 2021

Jiashu Wu, “e-POP Observations of Suprathermal Electron Bursts in the Ionospheric Alfvén Resonator”, *JGR Space Physics*, Feb 2021

Jordan Smith & Hadi Zadeh Haghighi, “Radical pairs may play a role in xenon-induced general anesthesia”, *Scientific Reports*, March 2021

Kailyn Stenhouse, “Development of a Machine Learning Model for Optimal Applicator Selection in High-Dose-Rate Cervical Brachytherapy”, *Frontiers in Oncology*, March 2021

Ayush Mandwal, “A biochemical mechanism for time-encoding memory formation within individual synapses of Purkinje cells”, *PloS one*, May 2021

Hadi Zadeh Haghighi, “Entangled radicals may explain lithium effects on hyperactivity”, *Scientific Reports*, June 2021

Pictures, from left to right: ALPHA (The CERN-based ALPHA collaboration involving graduate students Andrew Evans and Adam Powell, and faculty members Dr. Timothy Friesen & Dr. Robert Thompson). This image has been featured on the cover of *Nature*; Picture from “State of consciousness may involve quantum effects” on UCalgary News.

Defences and Candidacies

Stephen Wein, PhD Defence

Svetlana Kuznetsova, PhD Defence

Yanjuan Xiong, MSc Defence

Hamidreza Kaviani, PhD Defense

Kailyn Stenhouse, PhD Candidacy

Colleen Henschel, MSc Defence

Where are they now?

Anna Ordog, PhD



1. What is your role and research these days?

I am a postdoctoral researcher at the Dominion Radio Astrophysical Observatory and UBC Okanagan. I study the magnetized interstellar medium of the Milky Way Galaxy. Specifically, I am now involved in commissioning a new radio telescope for a polarization survey of the northern sky, and I am on the Galactic Science team for the Canadian Hydrogen Intensity Mapping Experiment (CHIME).

2. How has your research changed after grad school?

Much of my graduate school research was focused on radio astronomy data processing and analysis. In my postdoctoral research I have had the chance to gain hands-on experience with operating telescopes, and have learned a great deal about the technical aspects of building, implementing and testing a new telescope. I also now participate in several different research groups.

3. Is there anything that surprised you about being a postdoc?

Yes! I did not anticipate the huge variety of tasks I would be doing every week! It has been a challenge to learn how to balance everything I'm involved in, but it means there is never a dull moment, and I learn something every day. I also experienced some imposter syndrome before starting this job, and I have been pleasantly surprised that grad school did actually prepare me well to tackle the challenges in my current projects.

4. What do you miss most about U of C?

The sketchy bouldering wall, coffee from Coffee Company, and the subs from Bake Chef. For real though, I miss my friends, colleagues, mentors, and all the folks who made Science B a great place to work! I also really miss teaching/TAing and being involved in the Taylor Institute.

5. What advice would you give new/early-stage graduate students?

If you think you might like to continue with a career in academia, get to know people in your field. Ask your supervisor to send you to conferences and workshops and present your work whenever possible. Hopefully it will soon be possible to do this in person again! Also ask your supervisor to introduce you to their colleagues outside of U Calgary. Making those connections is the best way to open doors for opportunities beyond grad school. Get involved with groups like the DGA! If you have ideas for things you would like to see happening in the department or on campus, don't be afraid to take the initiative to start something new with your fellow grad students.



6. What direction would you like to go with your career?

At this stage, I'm open to different possibilities. While I would really like to continue doing research, I would also love to get back into teaching someday. So, a career that includes both at the same time, or at different stages would be great!

David Lake, PhD

1. What are you currently doing after finishing your PhD?

I'm a postdoc in the Painter group at Caltech (Quantum Photonics)

2. What are you researching?

A couple of different things! Right now my primary focus is quantum transduction. Perhaps the leading architecture for quantum computing at the moment is electronic circuits composed of superconducting components. These components must be operated in a millikelvin environment, which requires bulky refrigeration systems. While this is acceptable for local computing purposes, it's not so good if you want to build a quantum internet! Transduction experiments address this issue by converting signals from these superconducting components into light, which can then be sent down standard fiber optic links.

3. Looking back, do you have any insights into how to survive grad school?

Try and remember your motivations for going into grad school in the first place. I think this becomes tricky, particularly near the end of your degree where the responsibility / potential ratio increases, but I've found it useful. Also, experiments being difficult and being confused most of the time is the whole point. If it was easy someone else would have done it by now!



Please let the DGA know about your and your group's future successes!