NASA Career Forum: Astronomy Professor

THE OHIO STATE UNIVERSITY

CCAPP

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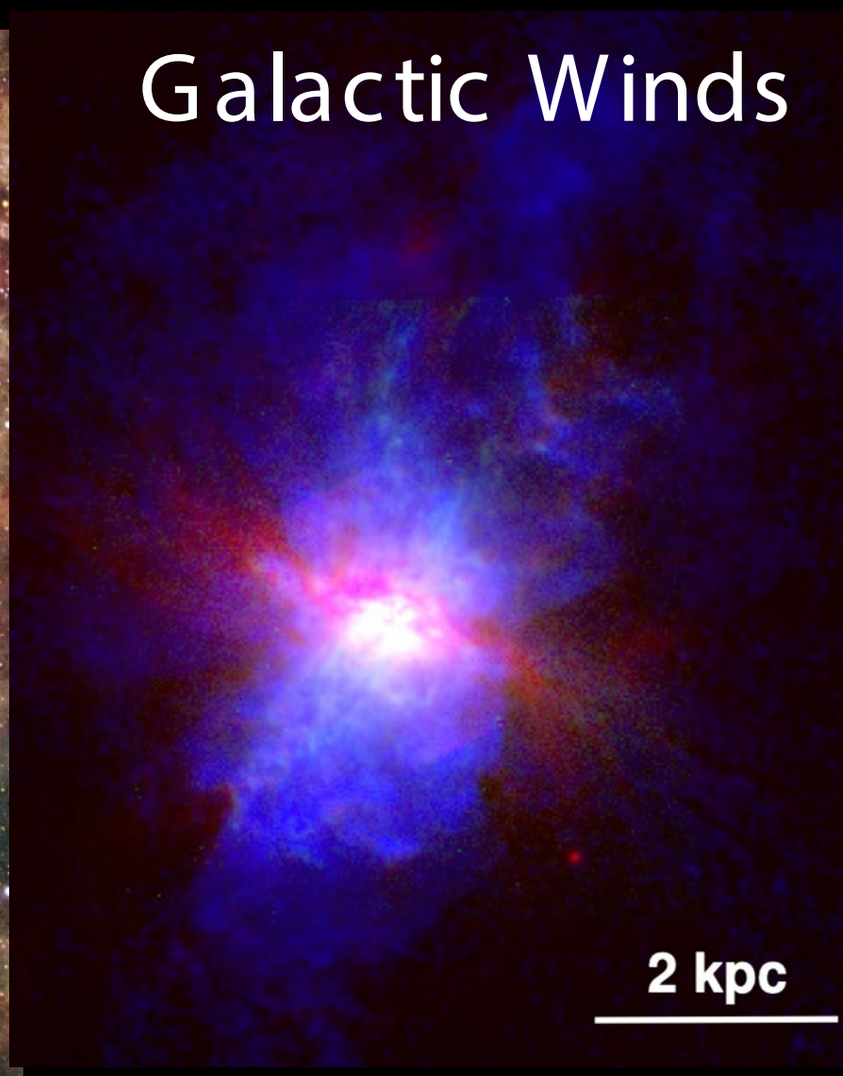
Research Interests



Approach: Use all the wavelengths,
bridge theory & observation,
study Milky Way & nearby galaxies

Trajectory

Begin X-ray research on X-ray binaries. Summer research at Goddard and Cornell.

Massachusetts Institute of Technology

Continue X-ray research, but on quasars

Start X-rays of supernova remnants. Decided to diversify to multiwavelength observations of star-forming regions in 4th year. Had 2-3 PhD advisors.

Began as assistant professor in 2015, still pursuing both topics while following students' interests.

Got into studying new topics while here: galactic winds, stellar feedback in nearby galaxies.

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Continued working on both topics as a postdoc independently.

CENTER FOR ASTROPHYSICS HARVARD & SMITHSONIAN

Lessons from My Postdoc + Prof Life

Postdocs are very independent, so find whatever routine and environment that makes you productive and excited about work and run with it.

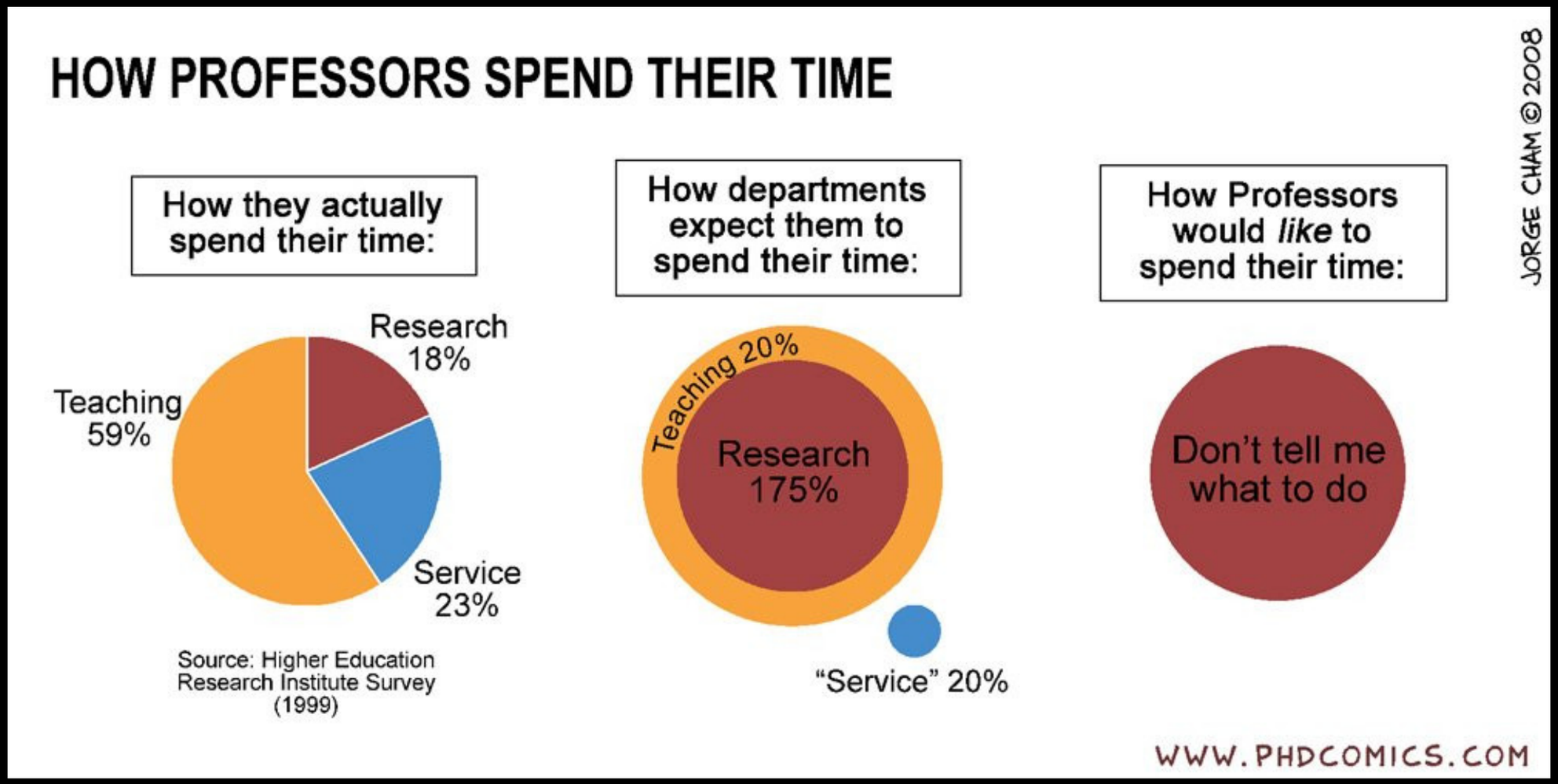
Seek additional mentors outside of your “advisor” as necessary; they don’t have to work in the same field.

Prof life is very structured, whereas postdoc life is not & is much more flexible. Be aware of this transition.

It is natural & expected to take time to adjust to postdoc and prof life. Productivity will return, and run with it when it does.

Tenure Track

Assistant professor (2015-21): **research**, teaching, service
Associate professor (2021-25): **research, teaching, service**
Full professor (2025-): research, **teaching, service**



Left pie chart is accurate for me if the "teaching" wedge includes research with students.

Professing: My Research Group

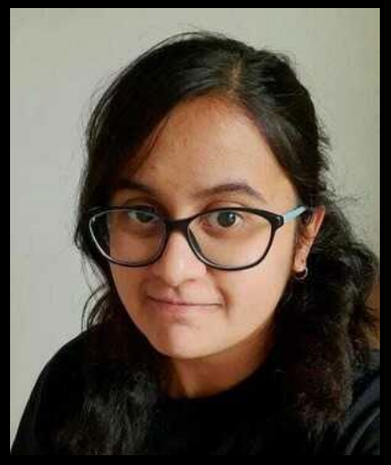
Build a group and do science together + with collaborators.

Sebastian Lopez

Elvira Cruz-Cruz

Karina Barboza

Paarmita Pandey



Deb Pathak

Jennifer Rodriguez

Shanel Deal

Research Topics:

- Sebastian (5th yr): Galactic winds
- Elvira (4th yr): Supernova remnants
- Karina (3rd yr): Stellar feedback
- Paarmita (3rd yr): Cosmic-ray feedback
- Deb (3rd yr): Dust in nearby galaxies
- Jennifer (3rd yr): Stellar wind feedback
- Shanel (2nd yr): X-ray binaries

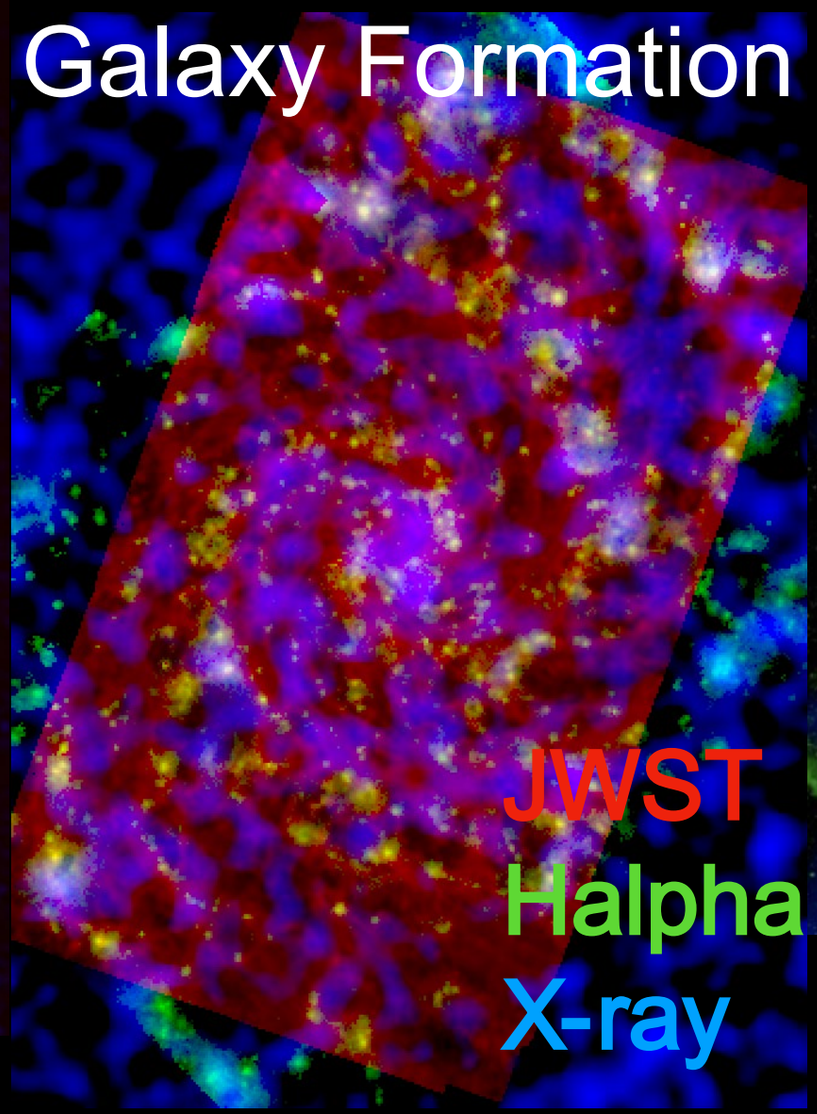
Professing: Research

I've appreciated the ability to meander as my interests evolve, new telescopes launch, new surveys occur.

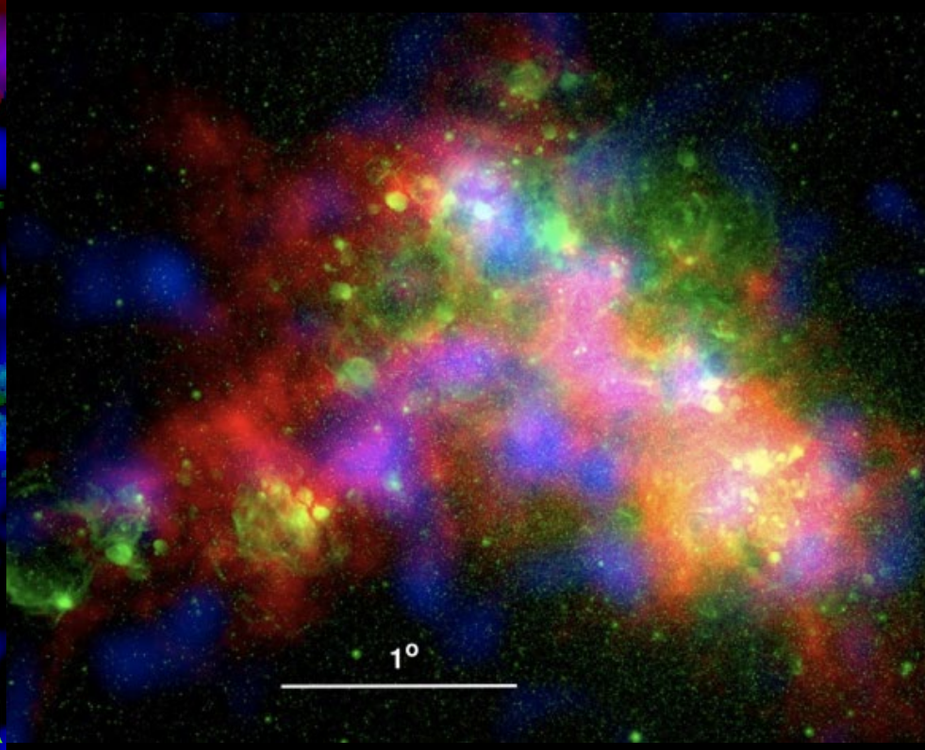
Topics I had never worked on previously that I have written papers on now:

Galactic Winds

Galaxy Formation



Fermi gamma-rays



Professing: Teaching

Teaching load at OSU is 1 class per semester — could be at the undergrad or grad level.

There are many different kinds of institutions (PhD-granting, PUIs, R2s, etc). Choose based on your priorities/interests.

Classes I've taught: general education classes ("Life in the Universe" and "Black Holes"), major classes ("Stellar, Galactic, & Extragalactic Astrophysics"), and grad classes ("Order-of-Magnitude Astrophysics").

Surprises regarding teaching: you can kind of do whatever you want, nobody necessarily trains you to teach well, possibly the most impactful part of my career (taught >1000 students at this point).

Professing: Service

For me, service is necessary for me to feel whole.

Choose service that you feel personally motivated to do anyway because then you'll get credit for it.

Member: 2009-15
Co-chair: 2021-

Member: 2016-19

STDT Member: 2016-2019

Co-I, Team Member: 2022-

Can interface a lot with NASA if service relates to new missions.

Lessons from Prof Life

Training students is a big part of prof life. Professing is a great option if you like training people in research.

Teaching is really impactful. Empowering people to feel capable is pretty awesome. Helping them succeed is the best. Each student is different, and working with them is a partnership.

I still get imposter syndrome, but I can recognize it for what it is now.

Collaborations and regular group meetings are a great way to keep momentum going in research.

Tips from Me to You

More than a particular research topic, advisors and mentors who advocate for you are key.

If you are unhappy somewhere, it is okay to leave.

You can learn anything you set your mind to learn.

When applying to jobs, cover letters are key. They are the Cliffs Notes of your application that committees see first. Explain why you're interested in this particular job.

Whenever visiting a place, show interest in what people are doing. Ask questions, think of ways to collaborate. This kind of engagement stands out.

Happy to share more if you have questions — lopez.513@osu.edu