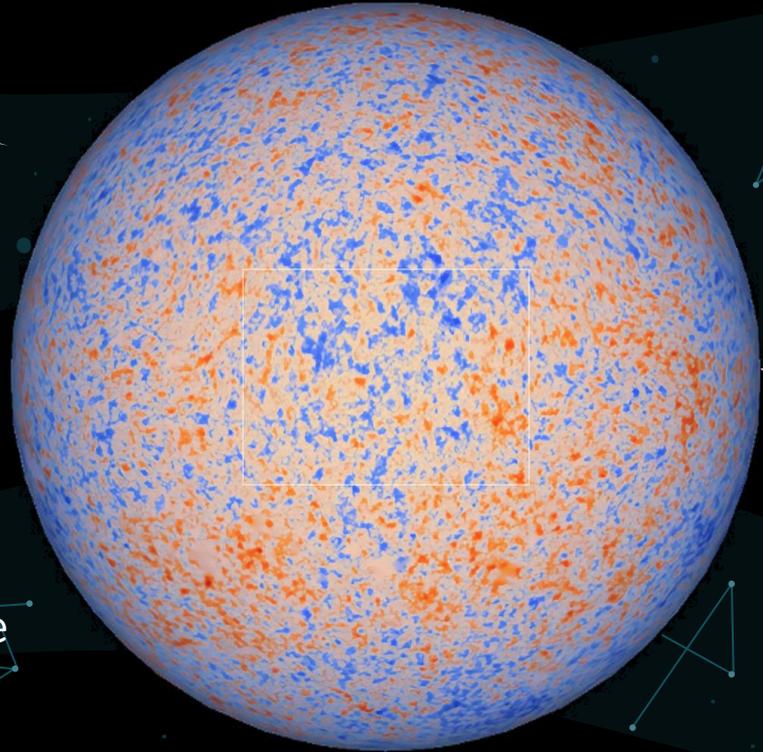
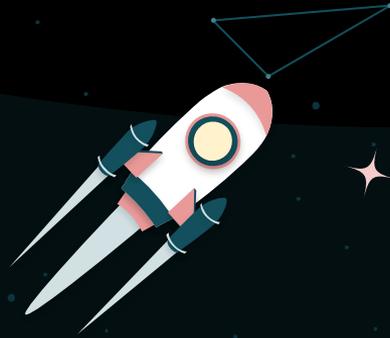


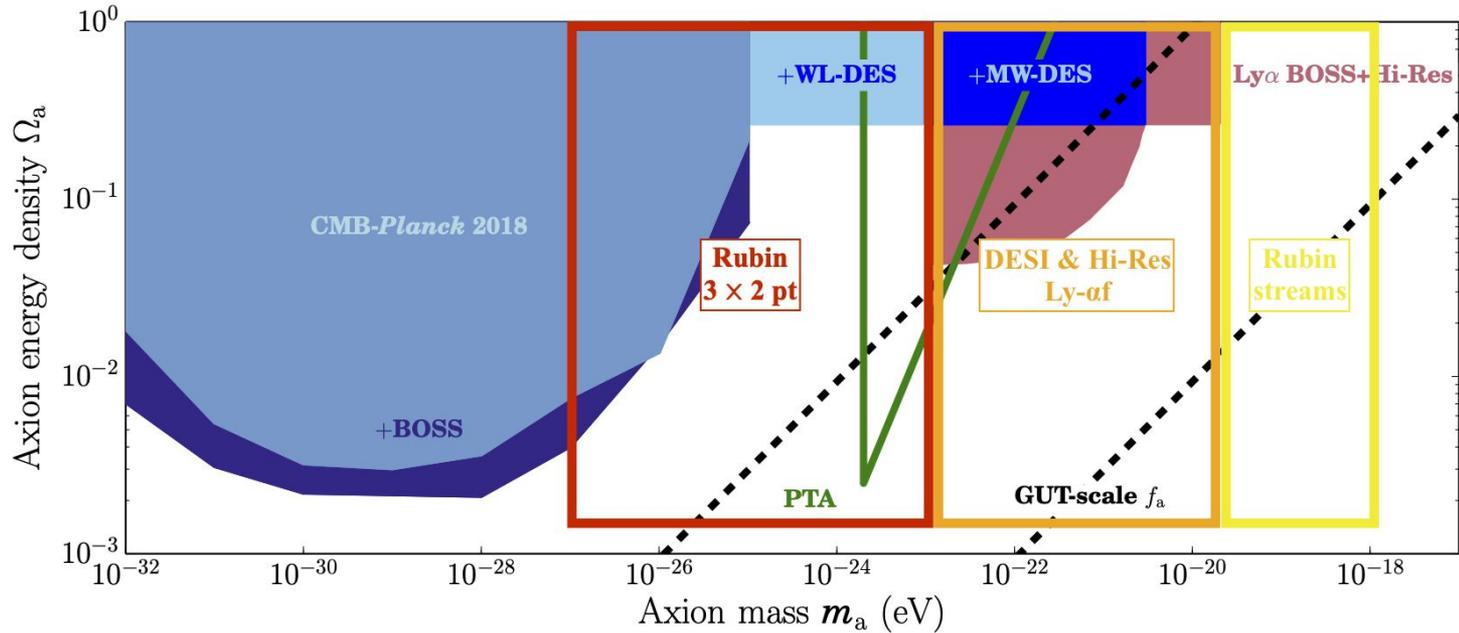
Hnauts research update



Renée Hlozek

Margaret Ikape, Victor Chan, Harrison
Winch, Bo Lin Fan, Simran Nerval, Danielle
Dineen, Keir Rogers, Yilun Guan, Ishika
Bangari, Alexander Spencer London, plus
many more previous Hnauts members!

Searching for the nature of dark matter (e.g., axions) in the cosmic web



Getting ready for Rubin! Modelling, systematics, ML methods

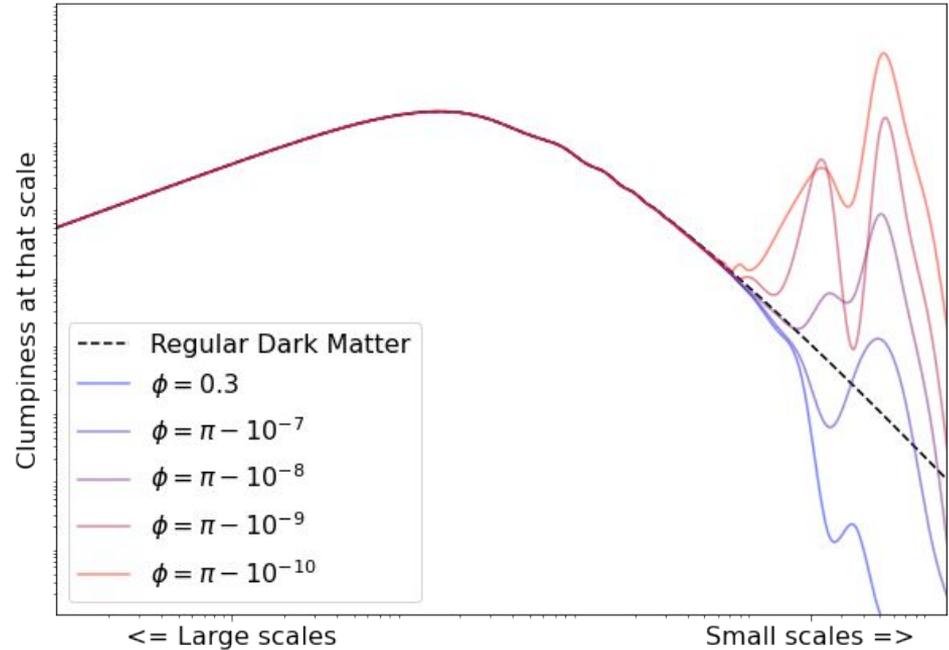
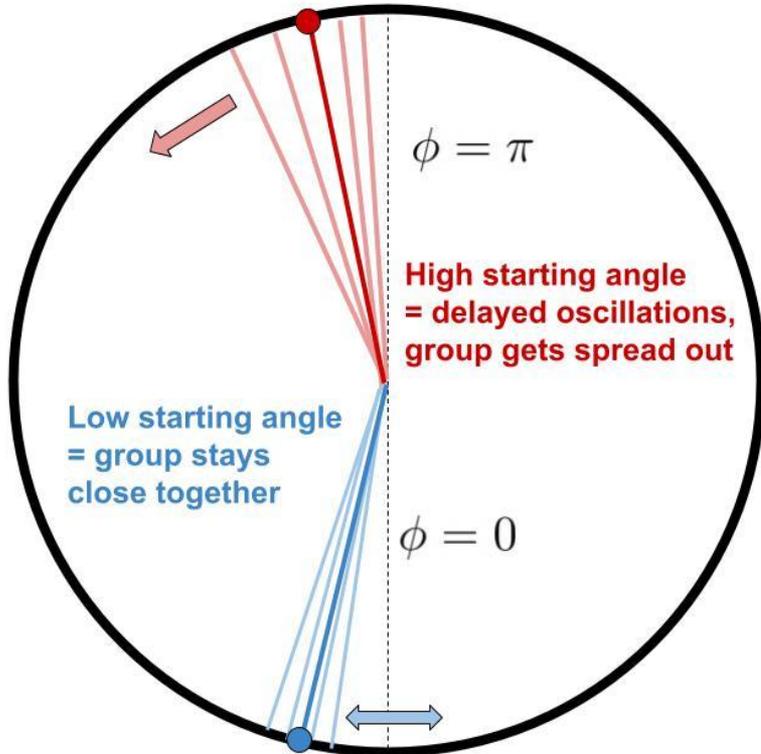


Harrison Winch - Extreme Axion Dynamics in the Early Universe

Office: AB230



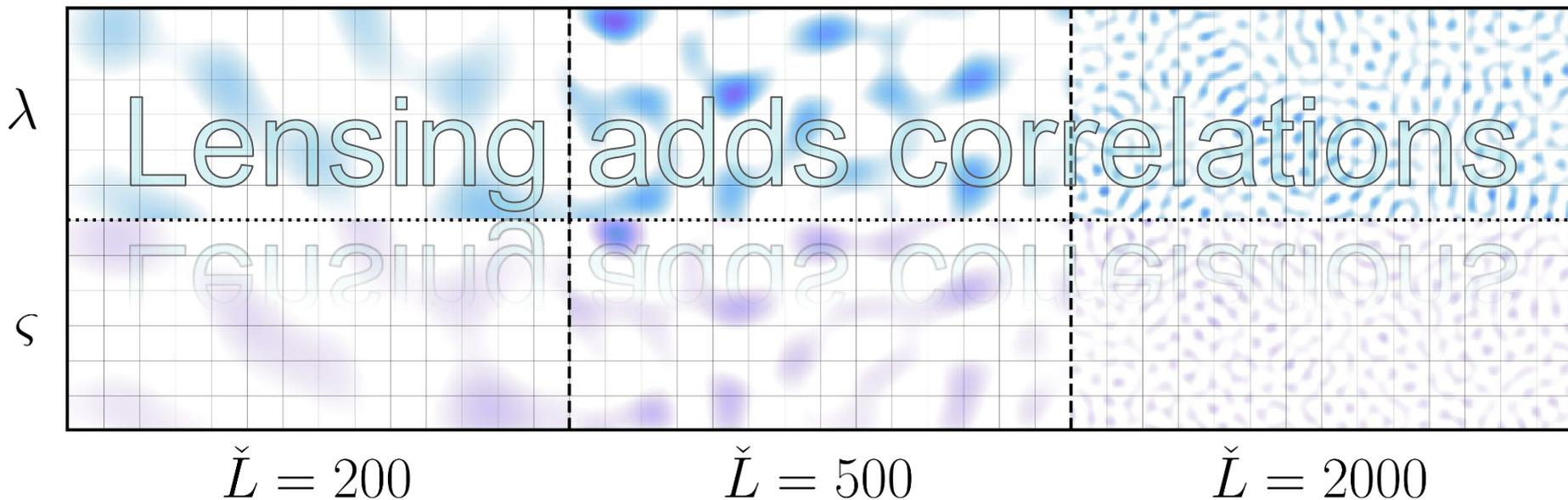
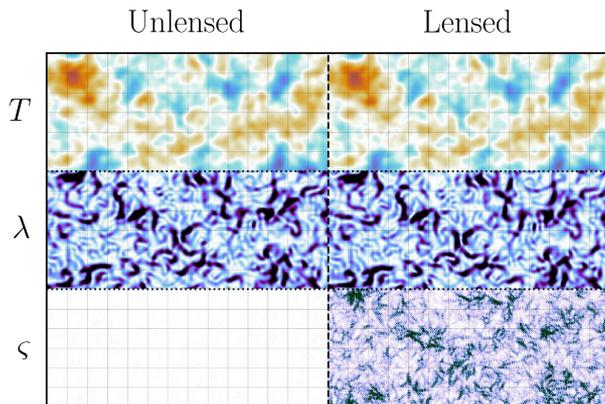
Axions act like a bunch of tiny pendulums everywhere in space



Victor Carl Chan (he/him)

AB203 - Thesis recovery this week

Sorry, I'm not there! Enjoy some pretty figures from my recent paper about CMB lensing, and I'm happy to talk to whomever and whenever.





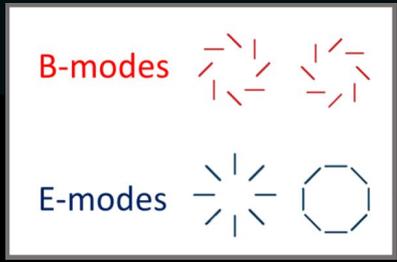
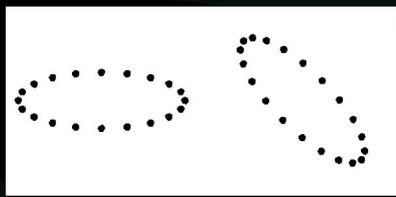
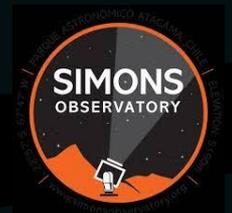
Inflationary Constraints with ACT, SO, and LiteBIRD

What types of signals could be produced by inflation?

- Are there other fields around during inflation?
- Do these fields oscillate during inflation?
- Is there any particle production during inflation?

How well can inflationary models be constrained?

- CMB pipeline development
- Accounting for systematics, i.e. crosstalk
- Using ACT data to constrain models
- Forecasting constraints for SO and LiteBIRD



Danielle Dineen

1st year PhD

MP 1318c

danielle.dineen@mail.utoronto.ca



MPhil Physics, University of Cambridge

Supervisor: Dr. Will Handley

Project: Israel matching conditions for primordial scalar perturbations



Dunlap Institute for
Astronomy & Astrophysics
UNIVERSITY OF TORONTO

1st year PhD (4-year track) University of Toronto



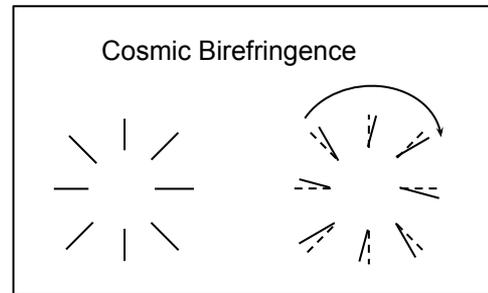
Supervisors: Dick Bond and Renée Hložek

Interests: Early universe cosmology, theory and observation

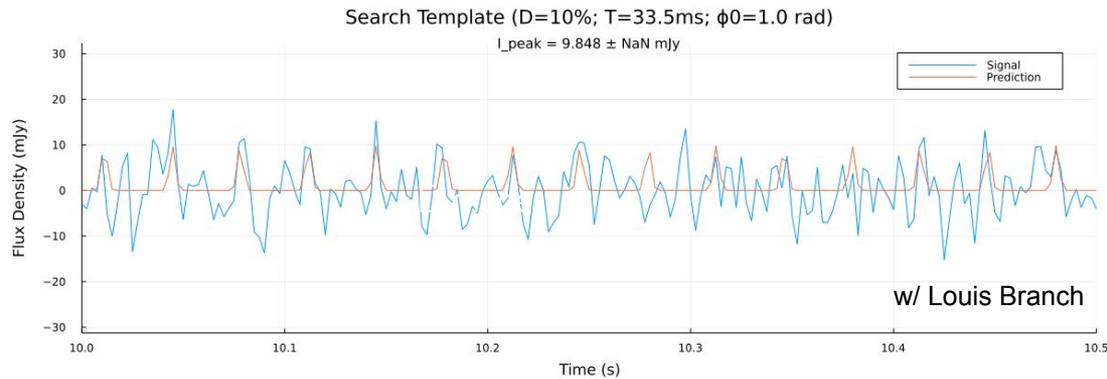
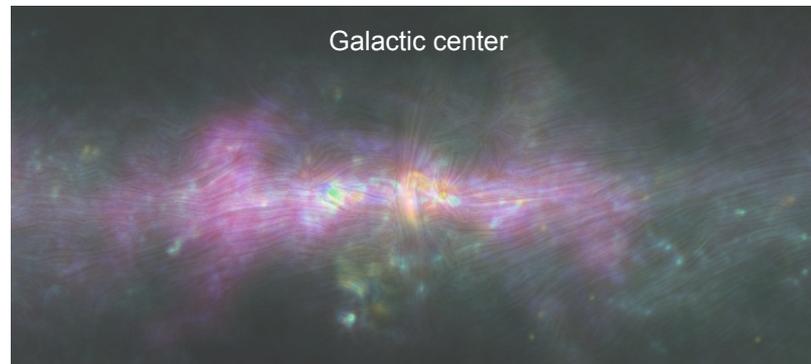


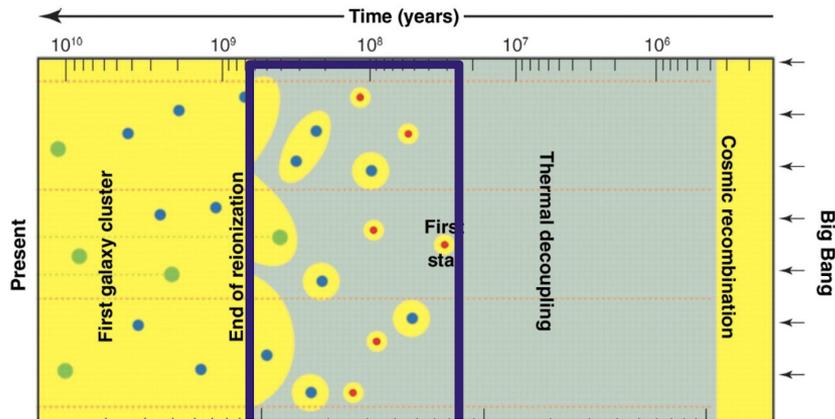


Yilun Guan
Postdoc at Dunlap
AB 122



- Pipeline development for ACT and Simons Observatory
- Higher-order statistics of the CMB
 - Cosmic birefringence?
 - CMB lensing
- CMB data for astrophysics
 - Galactic science
 - Galaxy clusters (tSZ, kSZ)
 - Transient

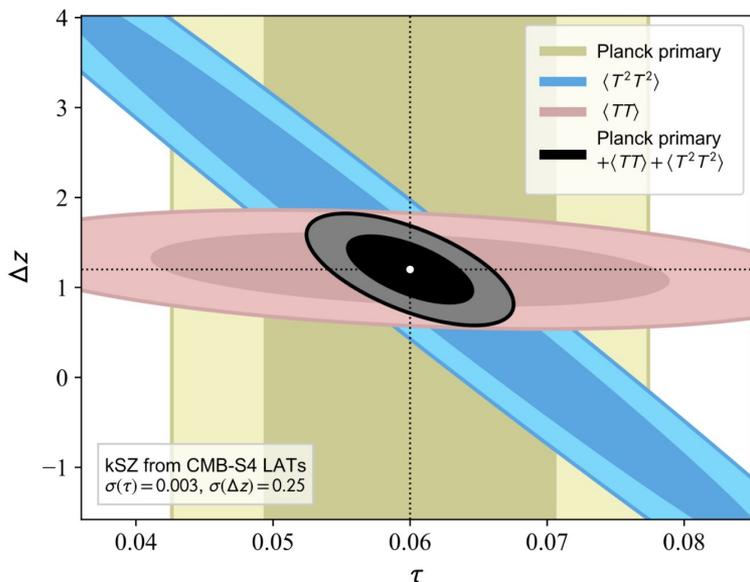




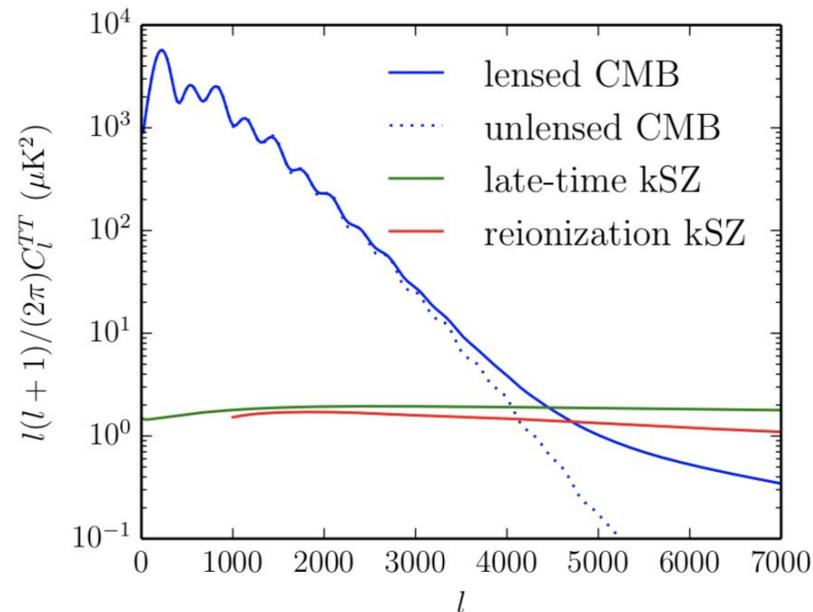
Probing the Epoch of Reionization with the Simons Observatory, CMB-S4, ACT



Margaret Ikape
AB 212



Alvarez ++ 2020: 2006.06594



Smith and Ferraro 2016: 1607.01769

Renée Hlozek

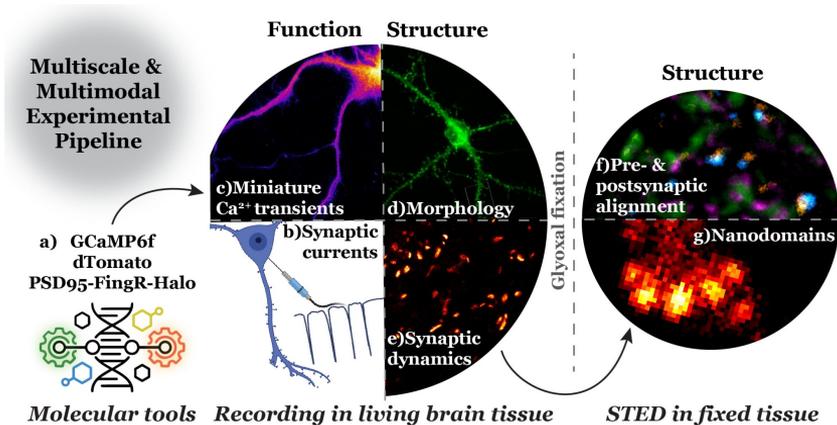
AB 222



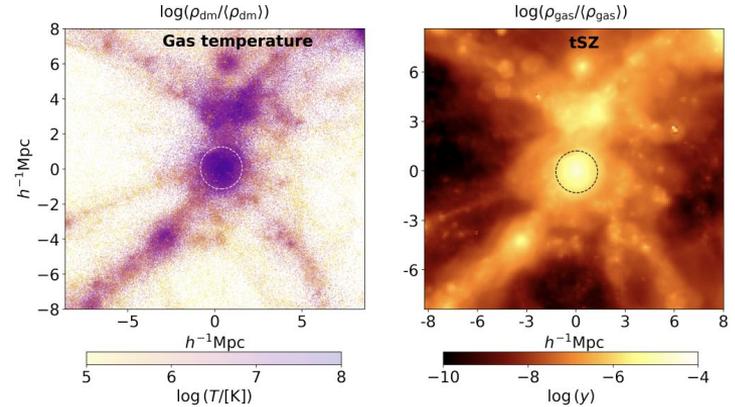
Novel applications of astro methods beyond astronomy:

How can we test models of learning using simulations?

How can we find flashes of light in the brain and use it to test for ALS or Parkinsons?



With previous Hnauts member Martine Lokken



Cosmology beyond the standard picture:

How can we constrain dark matter models with cosmology observations?

How can we use statistics to make the most of our data?

How did the early universe progress?

How does dark energy behave in cosmic time?