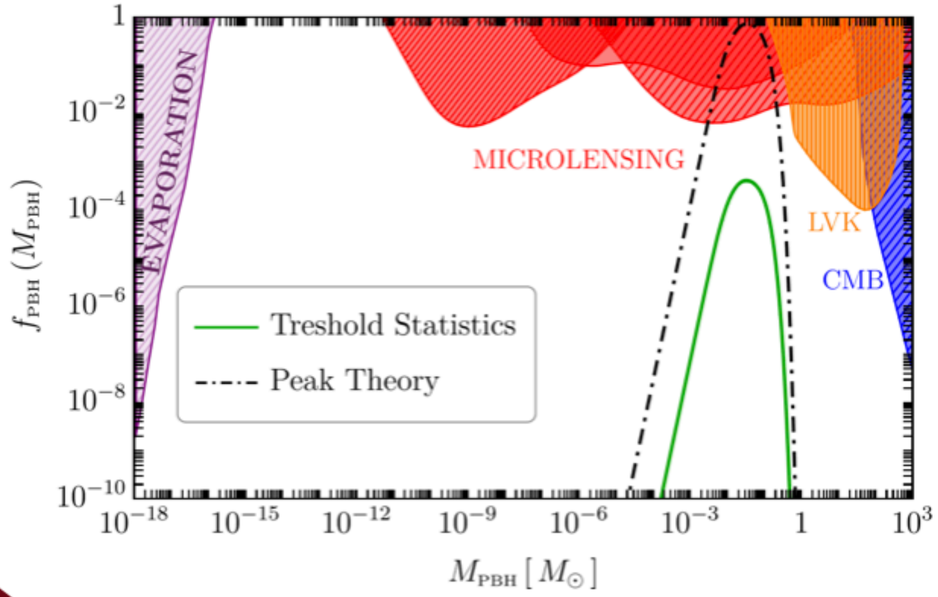
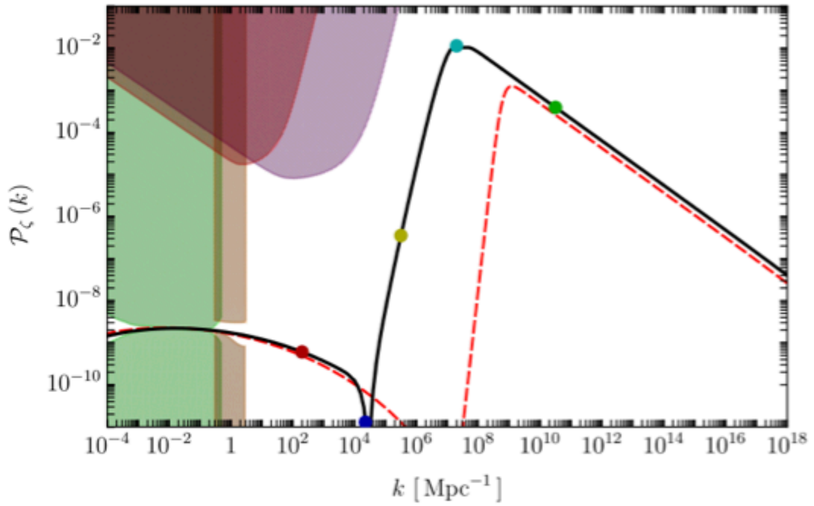
Sasha Allegrini – PhD Candidate, NICPB Tallinn

- Thesis work: Formation of Primordial Black Holes from single-field inflation.

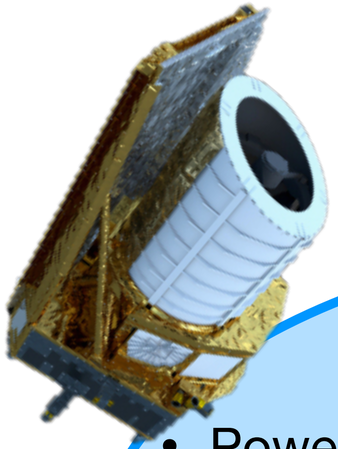




Future work...

- Phenomenology of strong primordial non-Gaussianities and PBHs for late time observables.
- Development of theoretical & computational tools for scalar-induced gravitational waves.

- Figures adapted from: S. Allegrini, L. Del Grosso, A. J. Iovino, and A. Urbano, arXiv:2412.14049.



Matilde Barberi Squarotti

(Almost) 3rd year PhD student at Università degli Studi di Milano

Galaxy clustering

- Power spectrum and bispectrum analyses with eBOSS data
- Preparing for Euclid (and for the presence of interlopers in the sample)

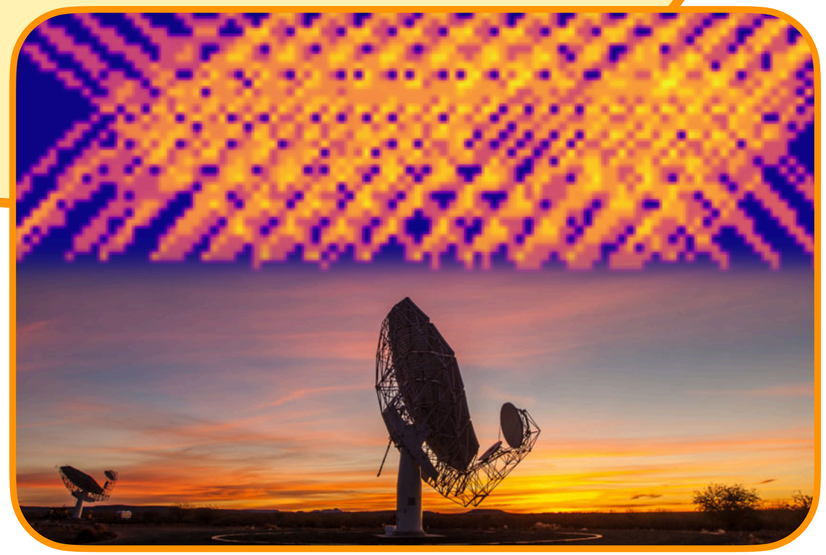
HI intensity mapping

- Detecting the HI cosmological signal with MeerKAT
- Forecasts for the SKAO

Large scale effects

- Primordial non-Gaussianity
- Relativistic and wide-angle effects

Multi-tracer technique



← My papers

Davide Barbini

PhD student @ **IFAE** Barcelona
(since May 2025)

dbarbini@ifae.es

Accidental Composite Dark Matter

- Model MD as a composite particle of a new confining Gauge Group
- Using accidental symmetries to explain DM stability

Domain Walls in Cosmology

- Studying the evolution of domain walls using numerical field theory simulations

Pierre Béchaz

University of Pisa and INFN, Section of Pisa
Largo Bruno Pontecorvo 3, 56127, Pisa Italy

- 1st year Ph.D. student at the University of Pisa, *Supervisor*: Prof. Giovanni Marozzi
- Research interests:
  - Cosmological perturbation theory beyond linear order
  - Relativistic Cosmology

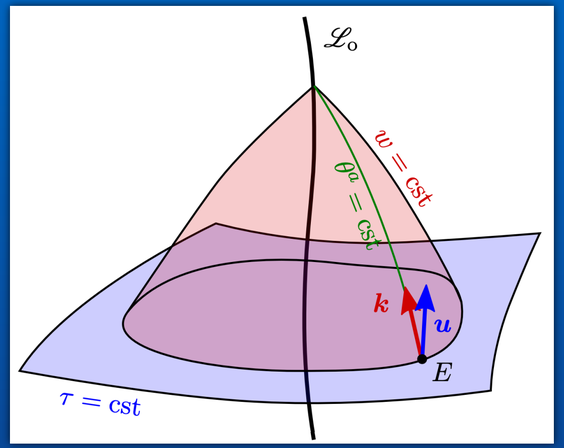
Primordial Universe

- Inflation
- $\delta\mathcal{N}$ Formalism

Late-time Universe

- Large Scale Structures
- Cosmological Observables

Geodesic Light-Cone Coordinates



main tool

Ewan Chamberlain

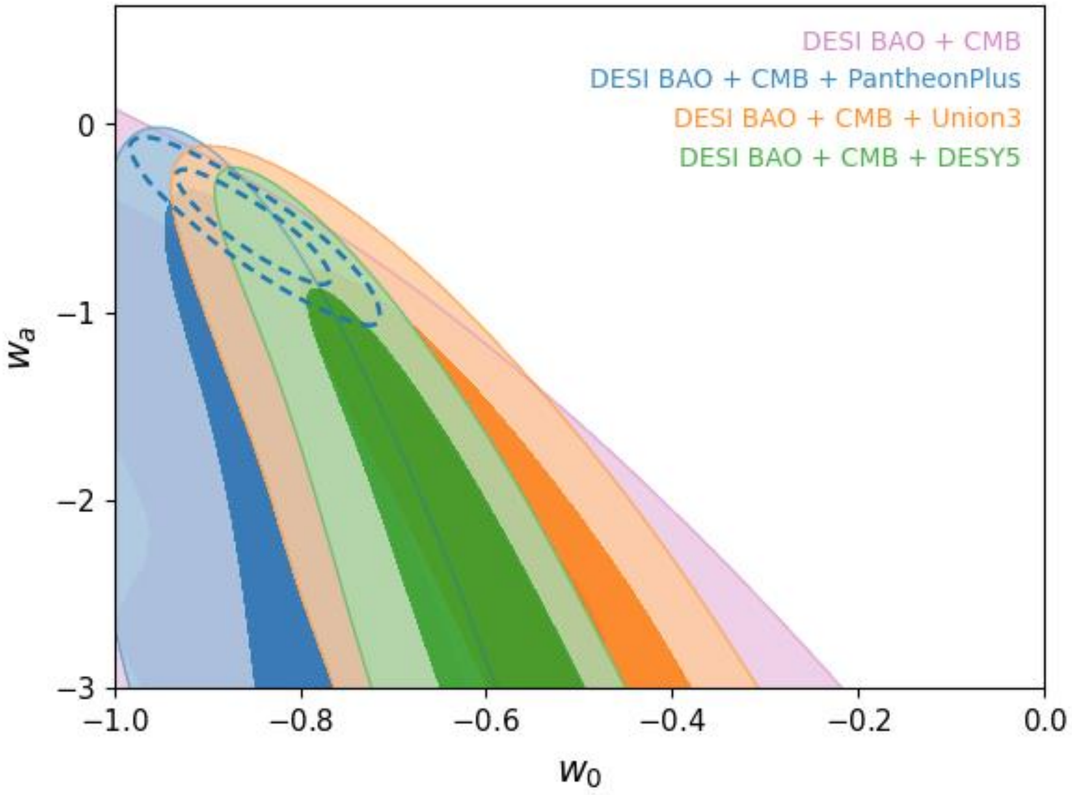
1st Yr PhD Student
Supervisor: Antony Lewis
University of Sussex, UK

ewanchamberlain.github.io
ec719@sussex.ac.uk

Interests:

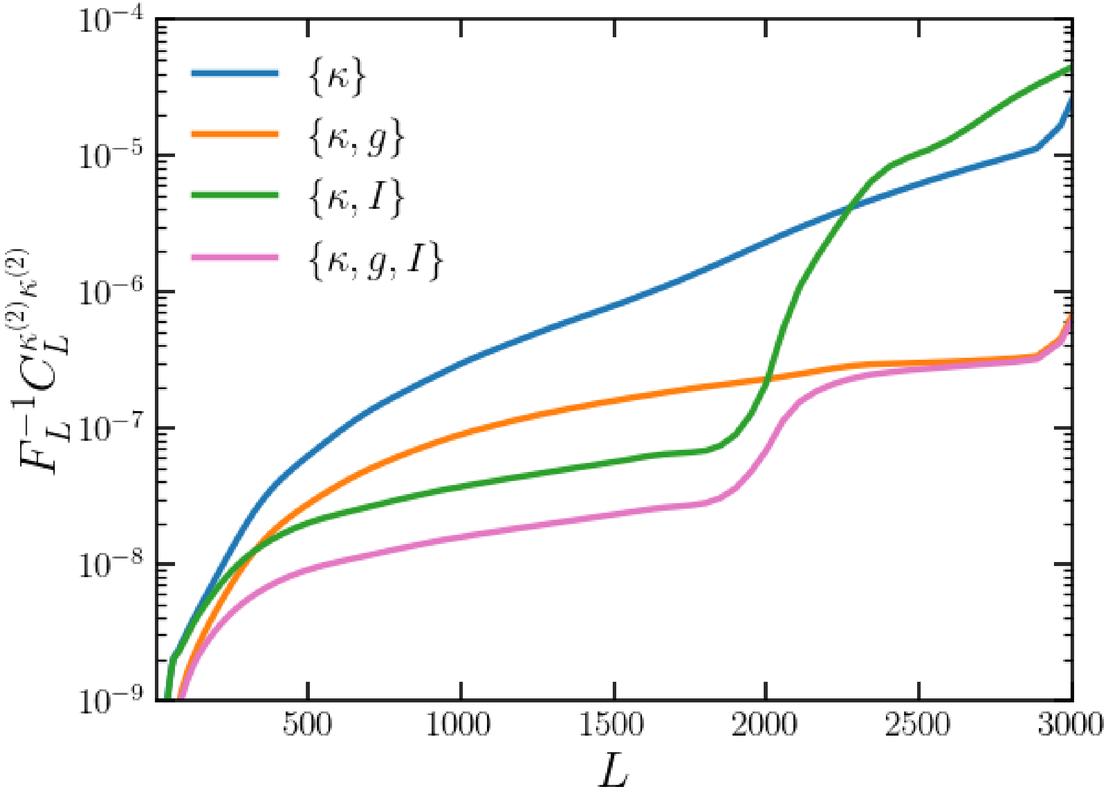
- CMB lensing
- Bispectra
- Dark energy
- BAO

DESI+CMB(+SNe) w/ NEC



Lewis & Chamberlain, arXiv:2412.13894

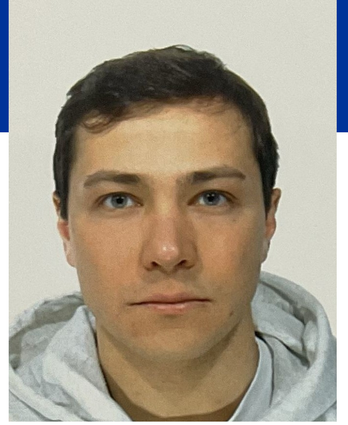
Detecting post-Born CMB κ



c.f. Robertson 2025

UNIVERSITY OF SUSSEX

Andrea Clini, MSc student, University of Milan



- **Currently: MSc in Physics, graduating next month, then starting PhD**
  - supervisor: Emanuele Castorina
  - thesis on **higher-order perturbation theory for decaying Dark Matter**

- **Previously**

  . . . then my postdoc was incompatible the physics MSc & tbh I just wanted to do physics

  - **PhD in Maths, *University of Oxford***
    Research on Stochastic PDEs & interacting particle systems
  - **BSc+MSc in Maths, *University of Pisa & Scuola Normale di Pisa***

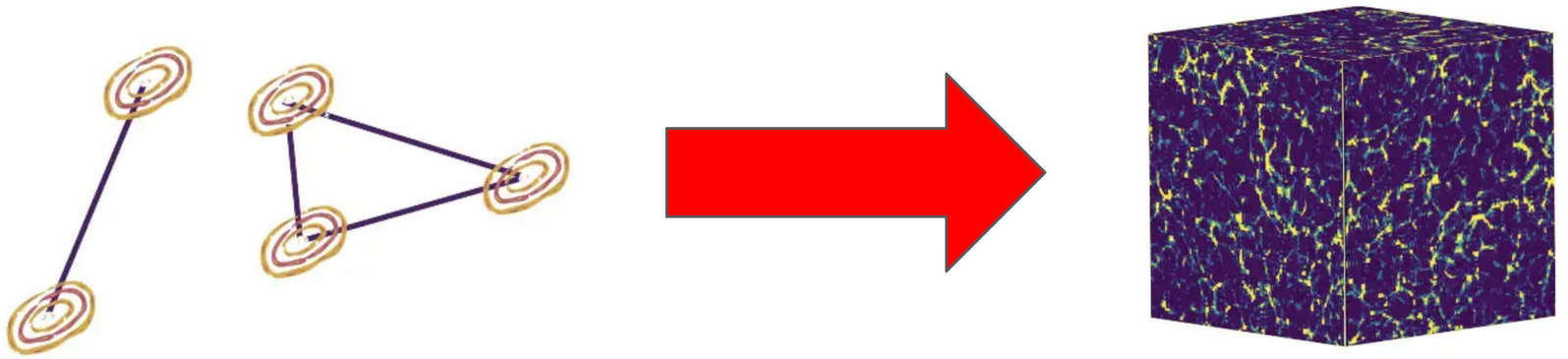
- **Research interests**
  - theoretical cosmology (EFT framework, higher-order pt) for BSM physics

  In the next future. . .
  - gravitational waves for cosmology & more generally gravity
  - early universe physics & other fundamental physics

Francesco Conteddu

fconteddu@mpa-garching.mpg.de

PhD topic: field-level inference of BAO



Master: “Multi-tracer beyond linear theory”, see 2504.18245.
Also working on MT + neutrinos

Andrea Crespi

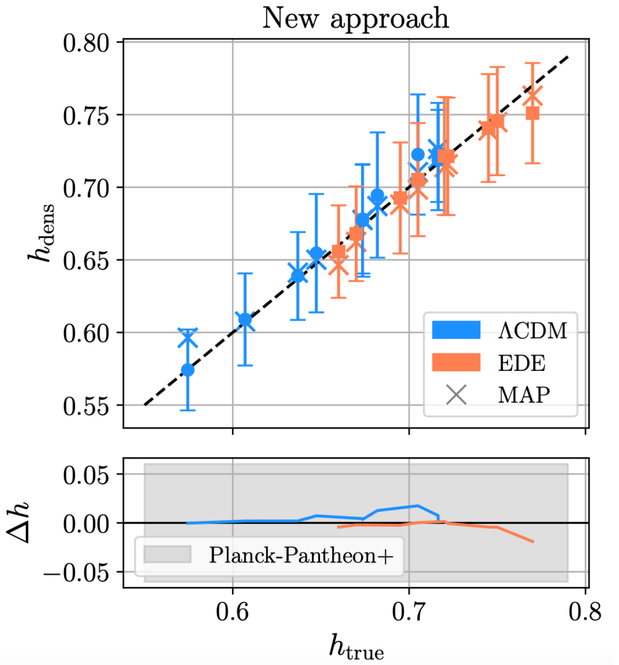
1st year PhD student - Advisor: Will Percival

a2crespi@uwaterloo.ca

UNIVERSITY OF WATERLOO | WATERLOO CENTRE FOR ASTROPHYSICS

Baryon signature in galaxy clustering 2-point statistics:

- Independent **baryon fraction** measurements from galaxy clustering for a **sound-horizon-free H_0** (Crespi et al. in prep., Krolewski et al in prep.)



- Optimization of **2PCF analysis** pipeline in real space within **BAO** working group in Euclid

Other interests:

- **Field level inference** of cosmological parameters from curved-sky data maps
- **Julia** programming language fan
- **Cosmological emulators** (with M. Bonici) – Bora.jl

julia

Eugenia Dallari - University of Sussex, UK

UNIVERSITY OF SUSSEX

Email address:
E.Dallari@sussex.ac.uk
Skype:
eugeniadallari

Let me introduce myself :

- II year PhD student in TPP
  Supervisor Prof. Ennio Salvioni
- M.Sc at the University of Florence !

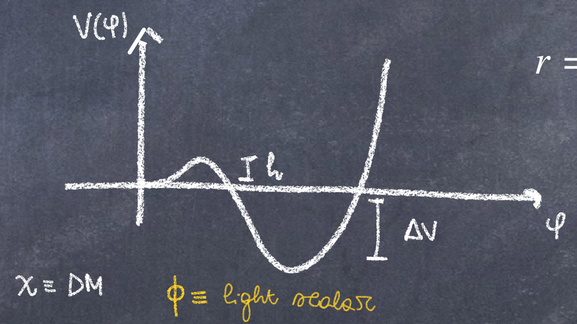
Research interests:

First order Phase Transitions in the early universe

Models of particle dark matter

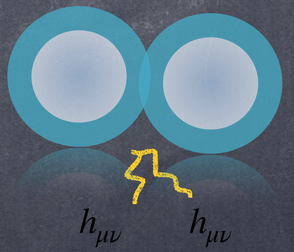
Test of fundamental physics with LSS

Recently..



$$r = \frac{h}{\Delta V} \ll 1$$

Thick bubbles collision



$$\mathcal{L}_3 \supset m_\chi^2 \chi^2 + \kappa_{\phi\chi^2}\, \phi\chi^2$$

Strength of the new force:

$$\beta = \frac{G_s}{4\pi G_N} = \frac{(\kappa_{\phi\chi^2})^2}{4\pi G_N m_\chi^4}$$

INFN Istituto Nazionale di Fisica Nucleare

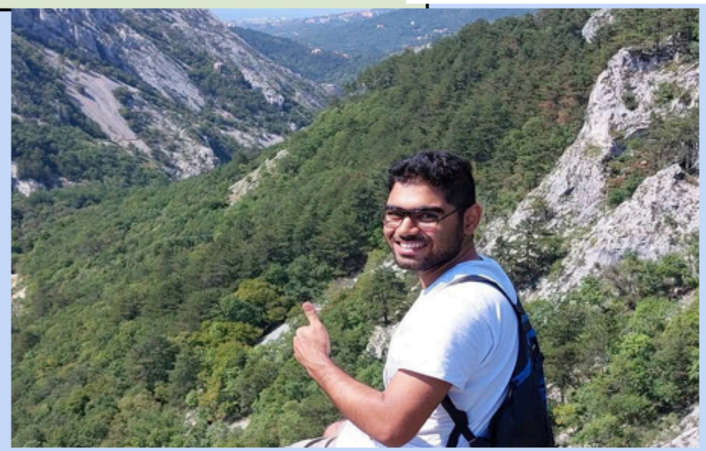
The Galileo Galilei Institute for Theoretical Physics

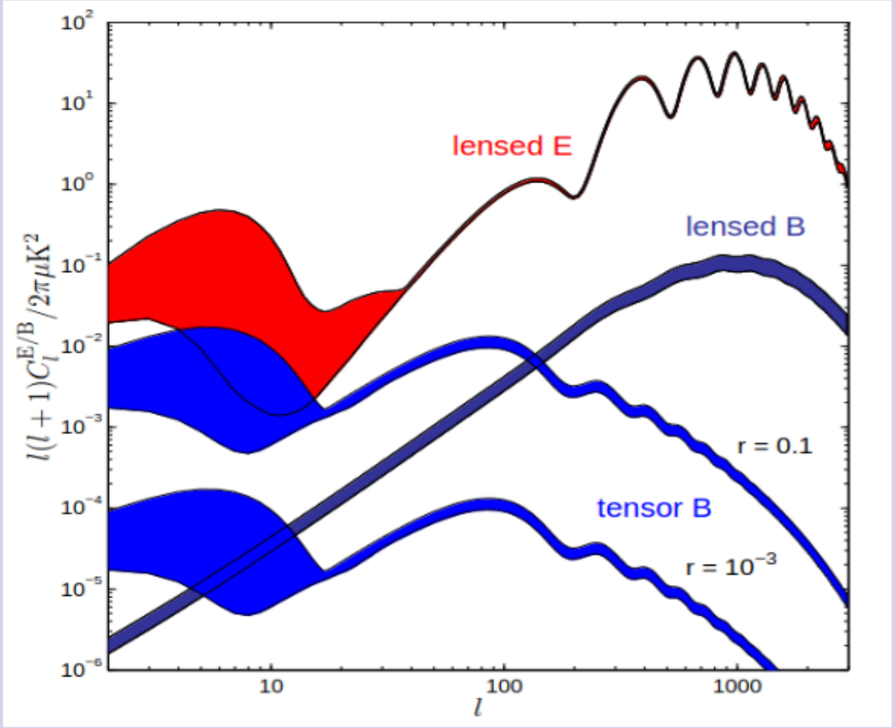
Hi, I am **Kishan Deka** (**E-mail : kishan.deka@ncbj.gov.pl**) **from India.**
Affiliation : National Center for Nuclear Research, Warsaw, Poland

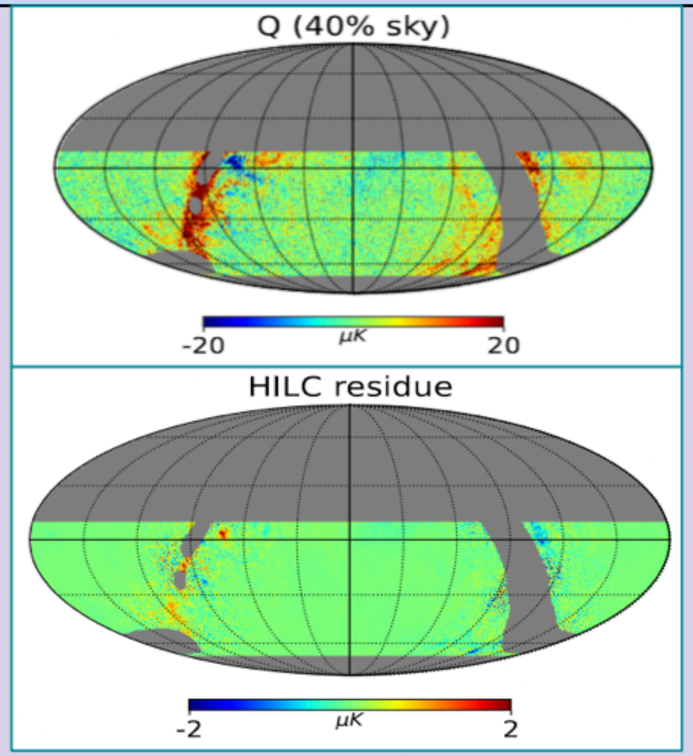
Project Title : Impact of galactic foregrounds on CMB lensing reconstruction and constraints on amplitude of primordial gravity waves.

Goal : Study the bias in delensing and tensor-to-scalar ratio (r) constraints due to non-Gaussian small scales in galactic foregrounds.

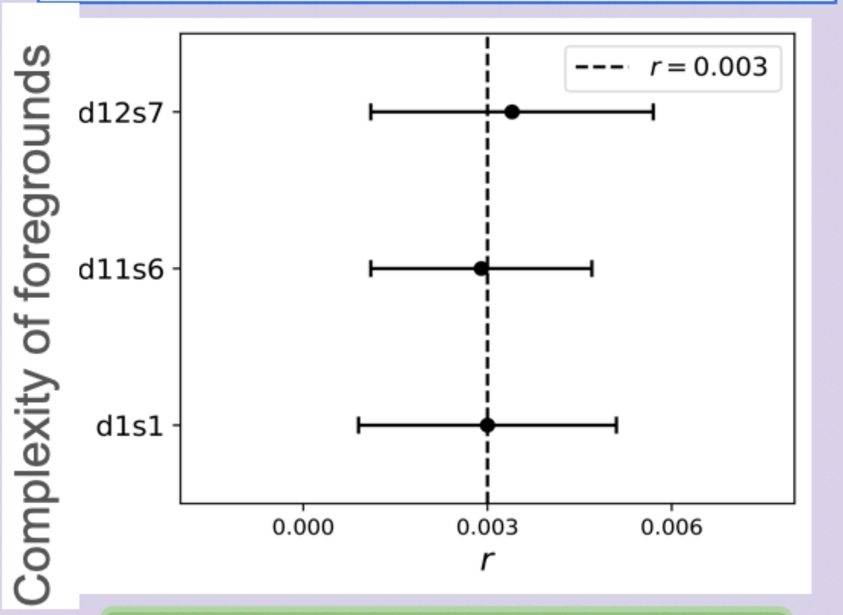
Results : Constraint on tensor-to-scalar ratio is limited by lensing residue and residual foregrounds.







Constraints on tensor-to-scalar ratio



Thanks, see you around !!!

- Dynamics of binary BHs in dark matter cusps, effects of dynamical friction and GW emission

  Dwarf satellite galaxies in the Milky Way potential

  Dynamical friction and collective processes in alternative gravities (MOND)

Pierfrancesco Di Cintio[1,2,3,4,*]

[1]CNR-Institute of Complex Systems
[2]INAF-Arcetri Observatory
[3]INFN-Firenze
[4]University of Florence, Physics and Astronomy department

[*]pierfrancesco.dicintio@cnr.it

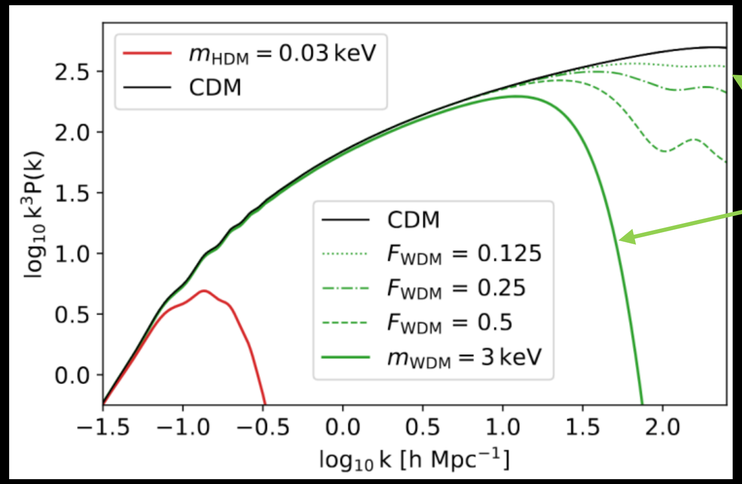
Olga García Gallego

2nd year PhD Student

Previous research

- Testing GR with higher-order multipole moments in **gravitational wave signals**

Research interests



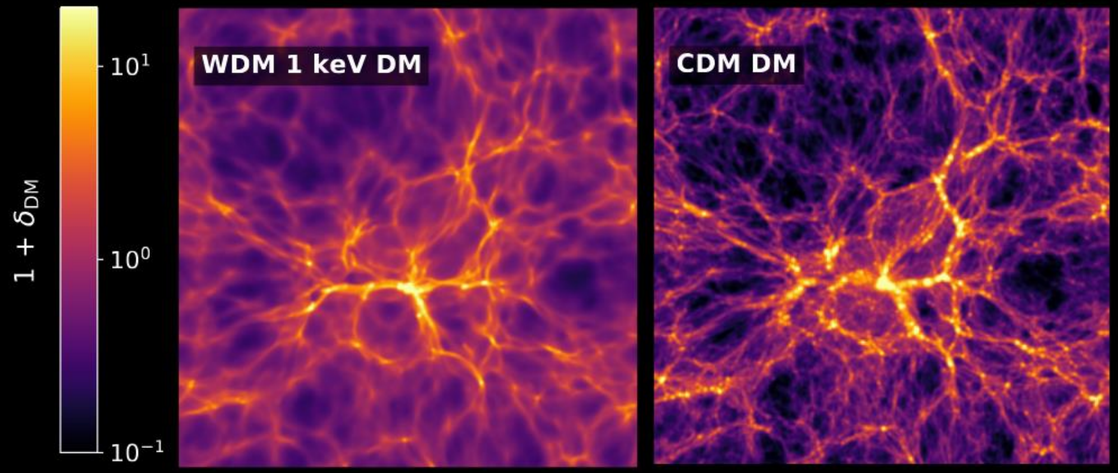
Sterile neutrinos ?

THEORY - **Testing models beyond ΛCDM**
Particle cosmology
Boltzmann solver codes

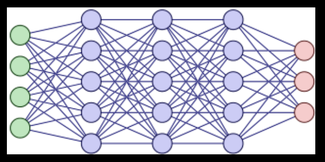
PhD work

Constraining mixed dark matter models with the Lyman-α forest

Phys. Rev. D 112, 043502



DATA - **Development of emulators for cosmological observables**



og313@cam.ac.uk

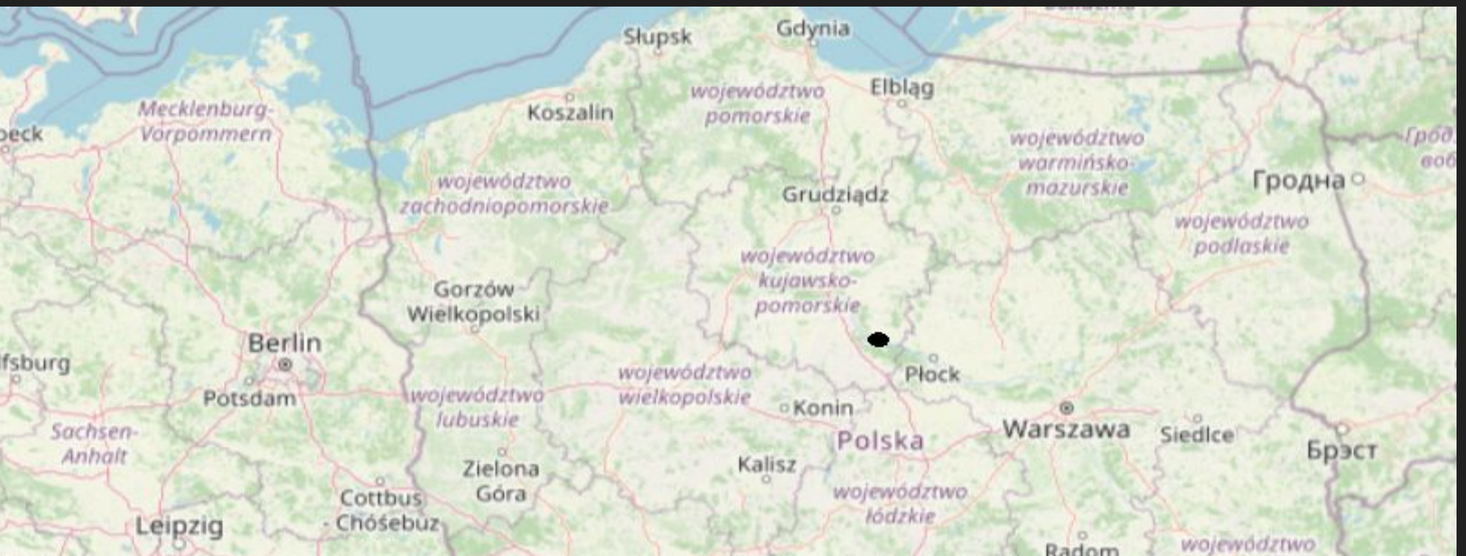
Gongshow GGI 2025

Name: Adam Gonstal, from Poland

Hobbies:

Anything Fantasy related.
Tabletop RPGS
Japanese Culture and learning Japanese

Second year PHD student at University of Warsaw
My first project was on detectability of Phase transition, published, arxiv:2502.18436
Now i am working on multifield inflation and GW coming from it

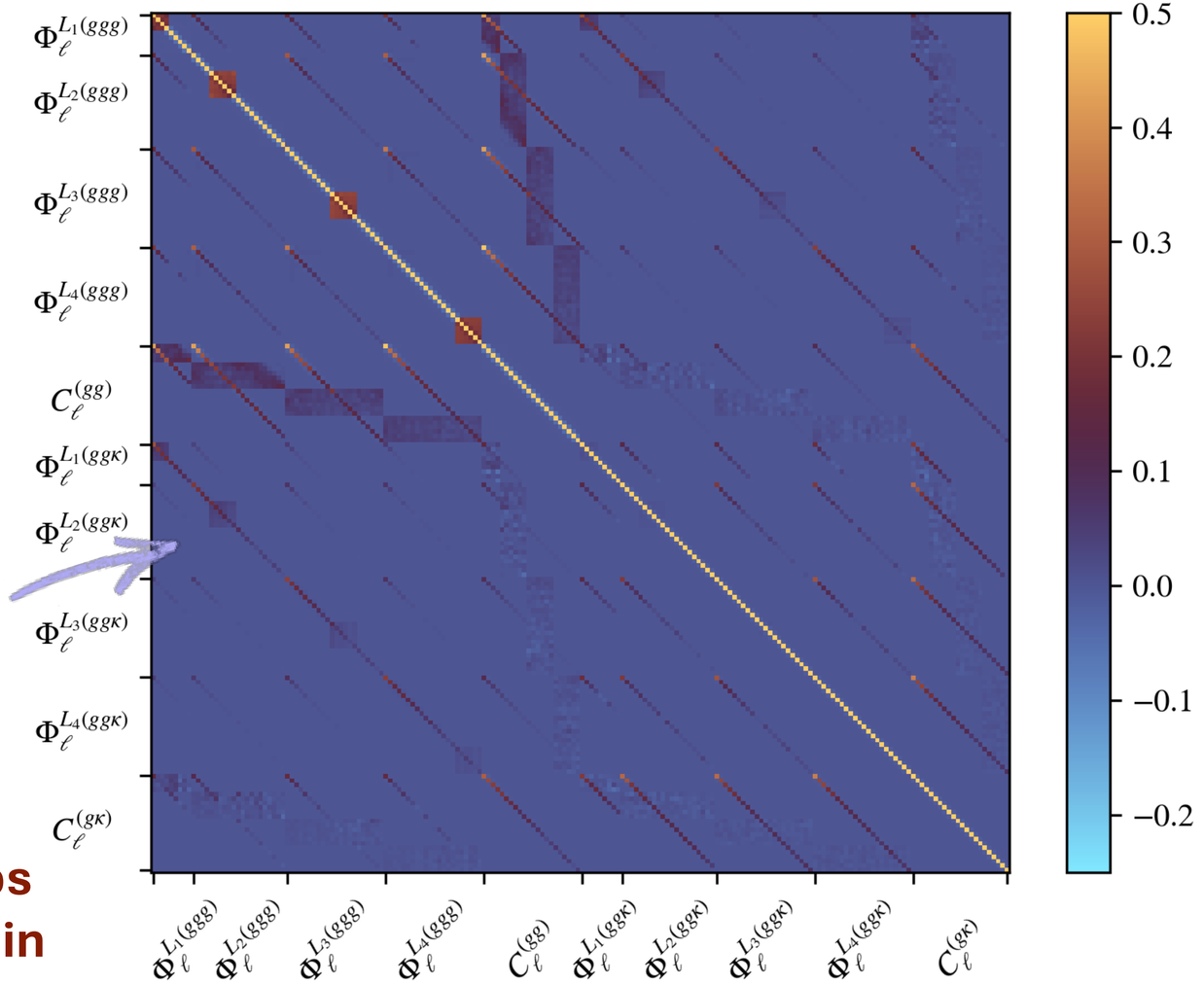


My hometown (black dot)

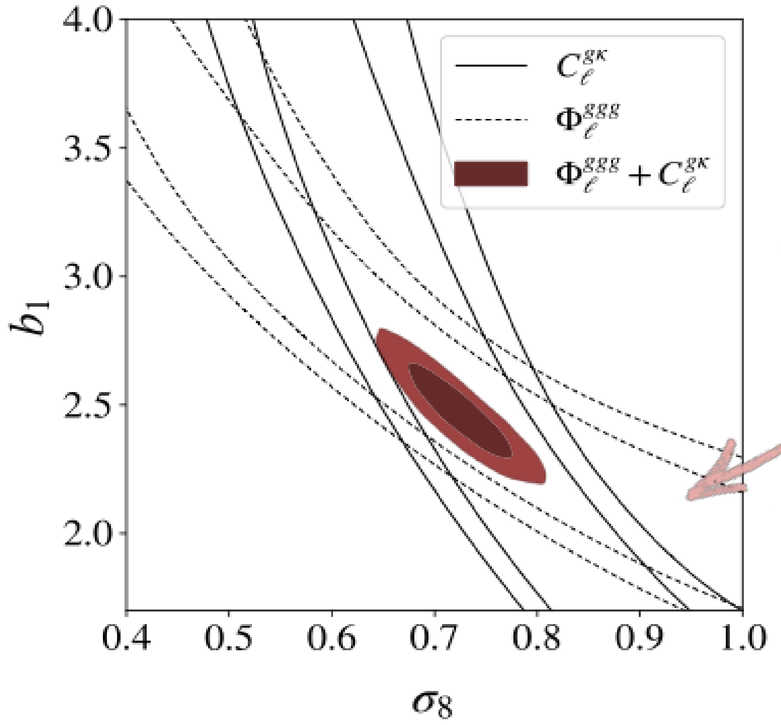
Léa Harscouët

- **higher order statistics**: applying power spectra techniques for **bispectrum** estimation
- working with David Alonso (supervisor) and others (Andrina Nicola, Anže Slosar)

analytical covariance for bispectrum estimator + traditional power spectrum



the bispectrum helps break degeneracies in parameter space



- **targets**: improving cosmological parameters constraints (breaking sigma8/bias degeneracy, primordial non-Gaussianities via fNL)
- **data**: mostly LSS probes, like galaxy clustering and CMB weak lensing

Cooper Jacobus

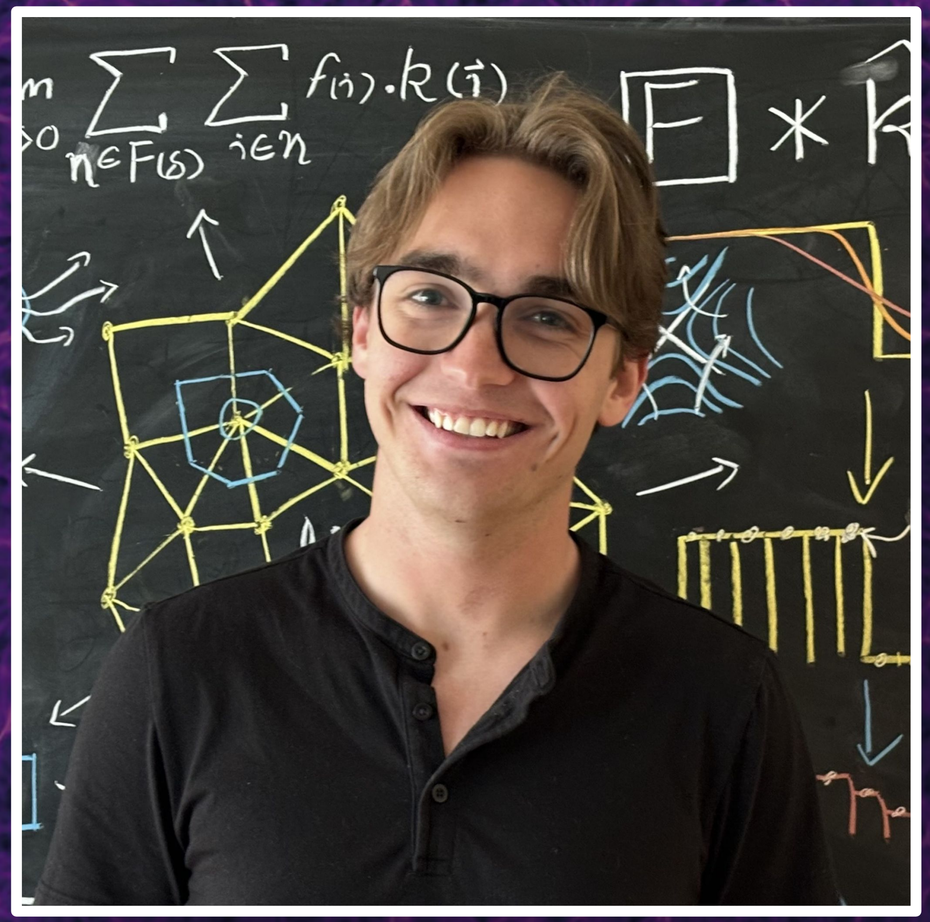
Incoming 1st-year PhD Student

Research Interests:

Large-Scale Structure Cosmology,
Computational Fluid Dynamics,
Machine Learning, Complex Systems

Work: Gpc-Scale Ly-α Mock Surveys

Affiliations: DESI, LSST, CMB-S4



STANFORD
UNIVERSITY

Cosmic Microwave Birdland

Jack Kwok (Cambridge)

Map Level

Component separation

(Pixel / Harmonic / Needlet ILC)

Lensed CMB + **Kinetic SZ** + **Thermal SZ** + **Other Foregrounds** + **Noise**

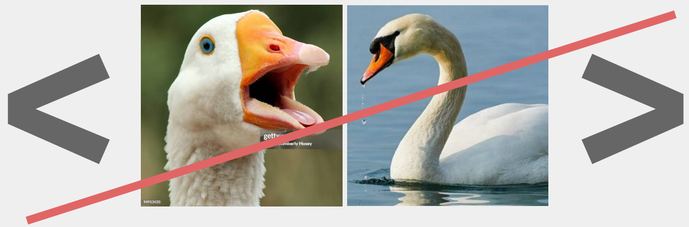
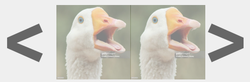



Spectral Level

Component separation

Spectral ILC – *new!*

Lensed CMB Power Spectrum


tSZ Power Spectrum

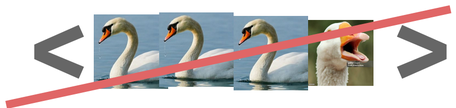
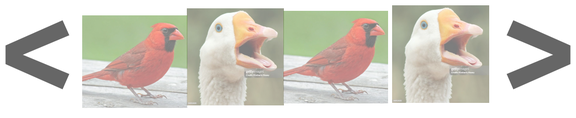
4-point Level

Component separation

4-point ILC – *new!*

Lensing Potential Power Spectrum

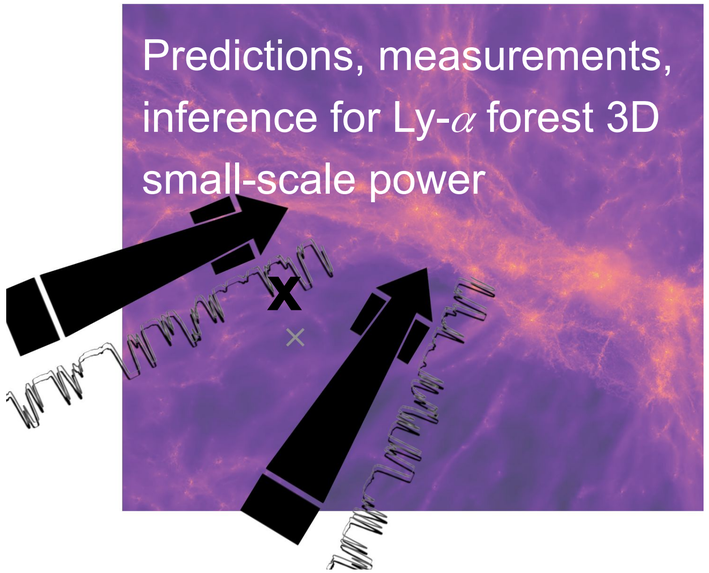
Patchy-reionization power spectrum

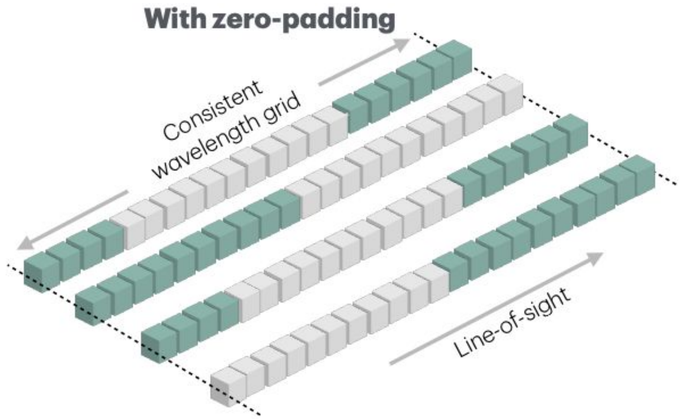
Martine Lokken, postdoc
IFAE, Barcelona
Galaxies x CMB secondaries, cosmic web, Lyman-α forest

Research interests

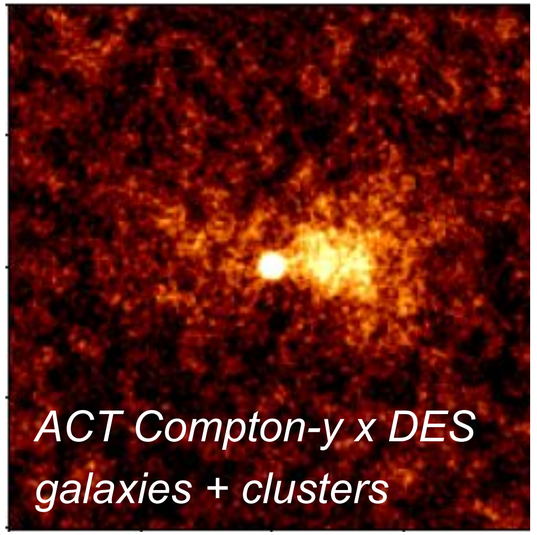
Predictions, measurements, inference for Ly-α forest 3D small-scale power



Mitigating systematics for Ly-α forest FFT-based methods



Superclustering of gas, dark matter, galaxies



Beyond research

Environmental sustainability for astronomy, music, dance, language & culture

Institut de Física d'Altes Energies

DARK ENERGY SPECTROSCOPIC INSTRUMENT

U.S. Department of Energy Office of Science

Website and contact

https://marlena6.github.io/, mlokken@ifae.es

Dario Lorenzoni

PhD student at the University of Manitoba (Canada)

- Before Winnipeg: Manchester, Bologna
- Research focus: early universe cosmology (inflation, primordial black holes) and link to observations (why I’m here!)
- Apart from physics: nature, swimming, laughing

Bernardo Marchini - Cosmology student

- **Master's thesis** student at the University of Florence
- Working on **EFT of LSS** together with professor **Marko Simonović**
- We are **comparing Eulerian** and **Lagrangian** approaches for the evolution of cosmological fluctuations
- Aim: **calculate** the **correlator** between Eulerian and Lagrangian-evolved perturbations, giving a first quantitative hint for the **equivalence** of the two methods on **large scales**
- Applications:
  Baryon Acoustic Peak (BAO) reconstruction, reconstruction of the initial conditions and field-level based cosmological inference

DARK ENERGY SPECTROSCOPIC INSTRUMENT

U.S. Department of Energy Office of Science

UNIVERSITY OF WATERLOO

James Morawetz

1st year PhD Student with **Will Percival**

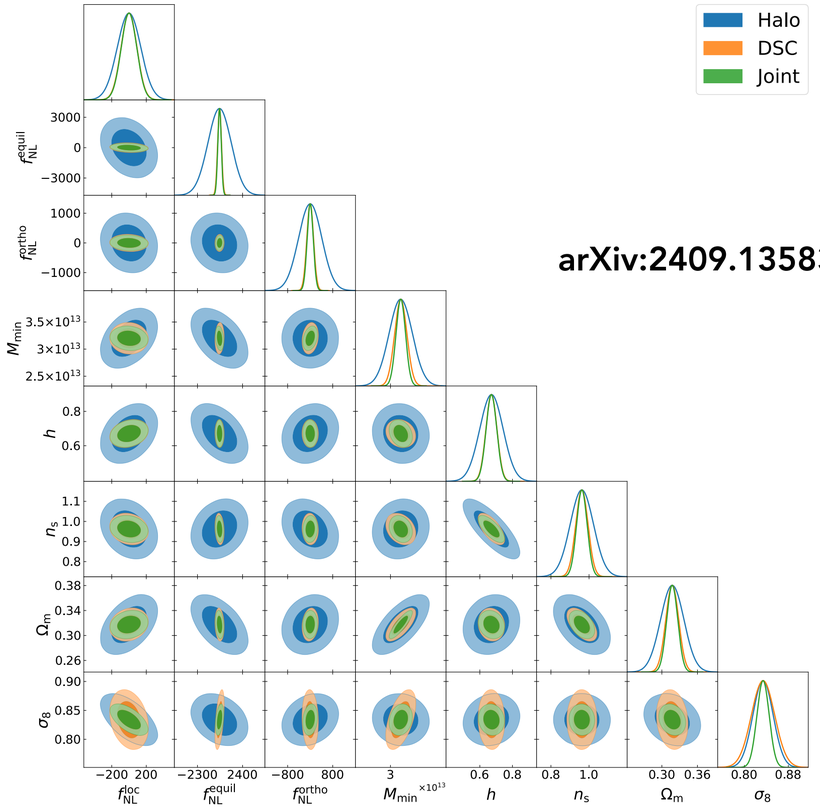
Waterloo Centre for Astrophysics (Canada)

jgmorawe@uwaterloo.ca

PAST PROJECTS

Constraining Primordial Non-Gaussianity with Density-Split Clustering (accepted in JCAP)

Collaborators: Enrique Paillas, Will Percival

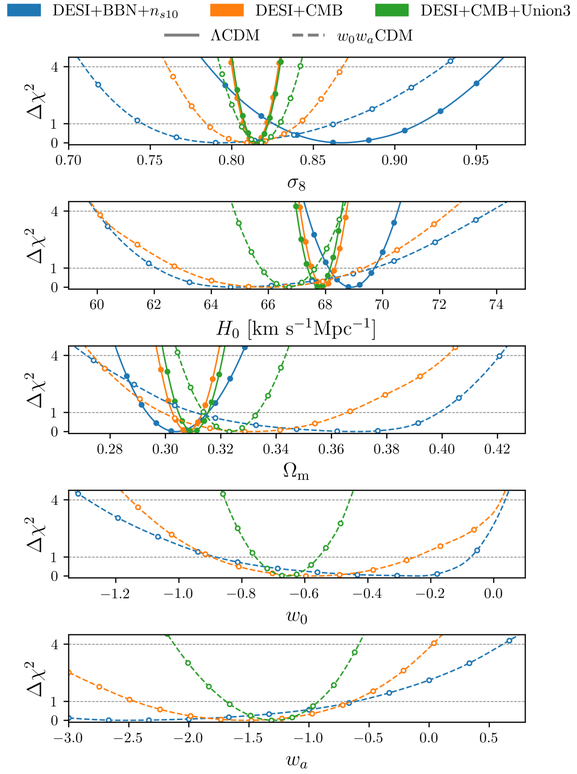


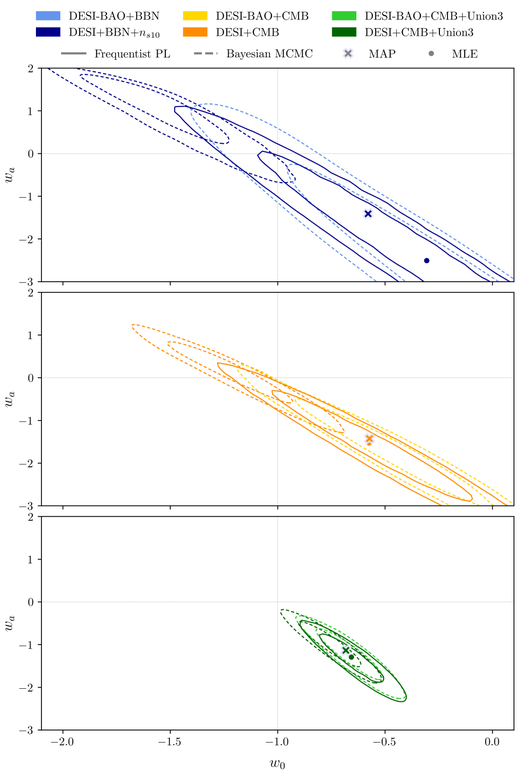
arXiv:2409.13583

ONGOING PROJECTS

Frequentist Cosmological Constraints from Full-Shape Clustering Measurements in DESI DR1 (submitted to JCAP)

Collaborators: Hanyu Zhang, Marco Bonici, Will Percival, Andrea Crespi





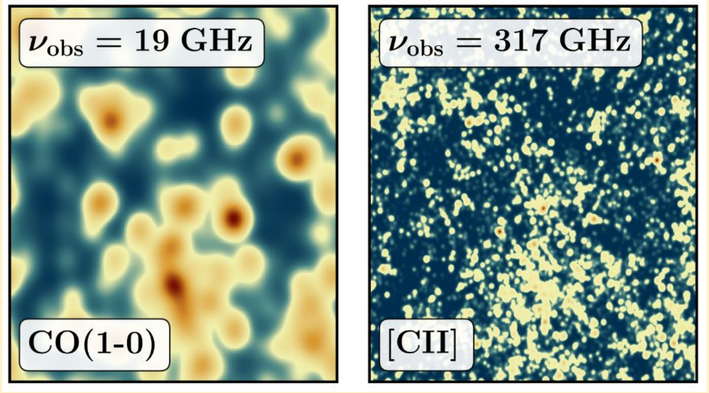
arXiv:2508.11811

Preliminary

Sefa Pamuk

Second year PhD

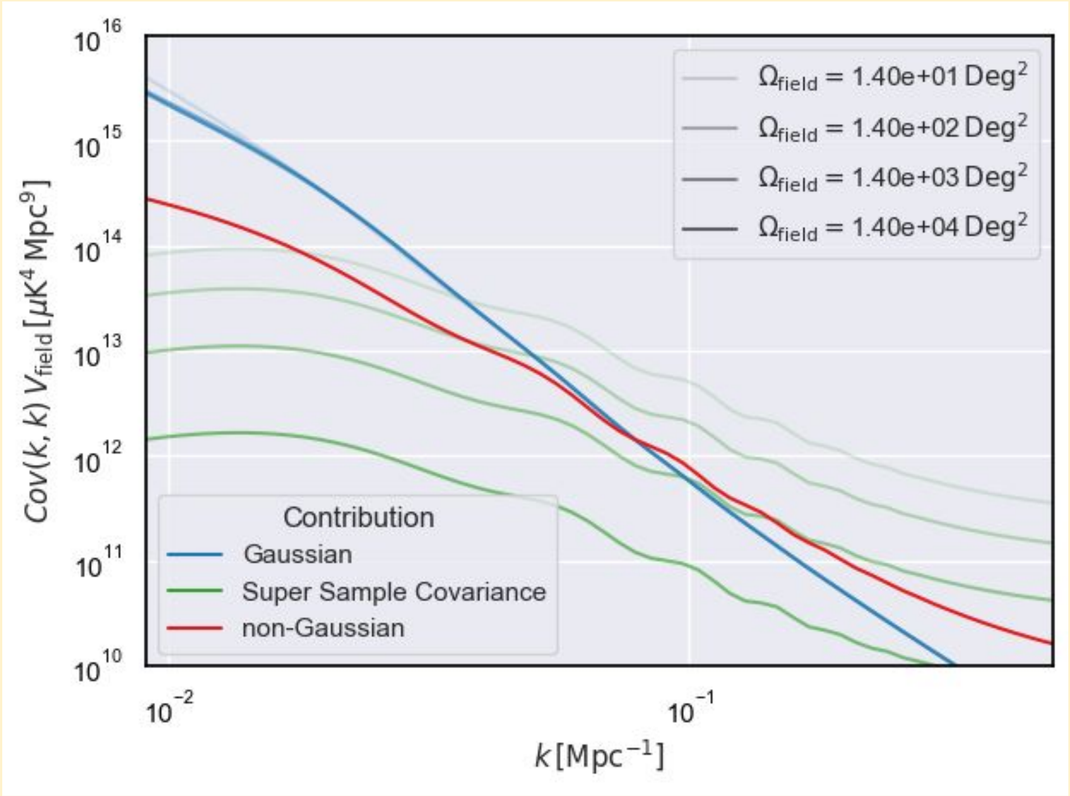
Instituto de Física de Cantabria
Universidad de Cantabria
CSIC Consejo Superior de Investigaciones Científicas



Current Work:

- Line intensity maps matter
- Deep fields need long integration
- Non-Gaussian fields at high redshift

⇒non-trivial covariance



Additional Interests:

- Massive neutrinos and modified gravity
- Beyond LCDM simulations
- Foreground subtraction

matteo.peronaci@uniroma1.it

Matteo Peronaci

Universities of Rome *Sapienza* and *Tor Vergata* / INFN Sezione di *Roma Tor Vergata*

"Astronomy, Astrophysics & Space Science" PhD Program, 1st year student

Research Projects

- Cross-Correlation of CMB observables and Large-Scale Structures tracers for constraining the cosmological model
  M. Migliaccio, G. Fabbian, G. Piccirilli

- Testing ΛCDM cosmological model with Genetic Algorithms and Gaussian Processes
  M. Martinelli, S. Nesseris, M. Migliaccio

Interests

Topics: Cross-Correlations, CMB observables, Galaxy Clustering, Bias modelling, Dark Energy, Primordial Non-Gaussianities

Methods and tools: CAMB, Class, Cobaya, MCMC, Simulation-Based Inference, Machine Learning for Cosmology

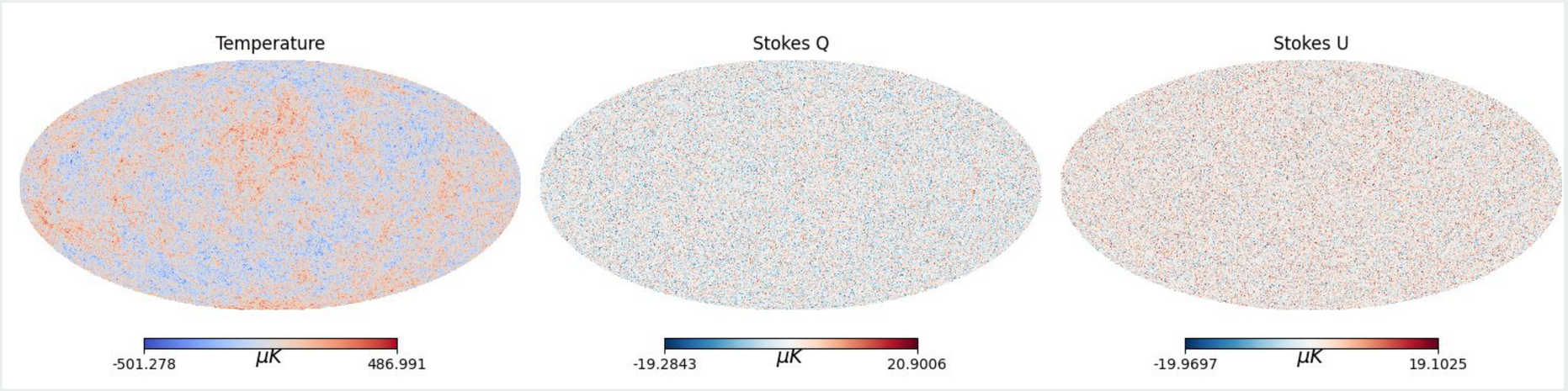
Nicola Principi

- Born in Ancona, Italy (the pearl of the Adriatic) in 1999
- 1st year PhD student in Warsaw, Poland
- I studied in Bologna, wrote my thesis at LAM, Marseille
- I worked as an outreach astronomer in the Maldives

My research interests:

- CMB lensing (main topic)
- Clustering
- Cosmic chronometers

Currently developing a set of correlated CMB and large-scale structure simulations! (TEReSiTA)



My dog:

Antonio Raffaelli - University of Ferrara

Initial Conditions

Primordial Power Spectrum reconstruction:

- **Parameter free reconstruction (FlexKnots)** [arXiv:2503.10609]
- **Search of specific features**

Emulators for CMB power spectrum and matter power spectrum

Other projects:

- **Cosmic Neutrino Background anisotropies analysis and cross correlation with CMB**
- **Alternative ways to B-modes of probing tensor modes in the CMB**

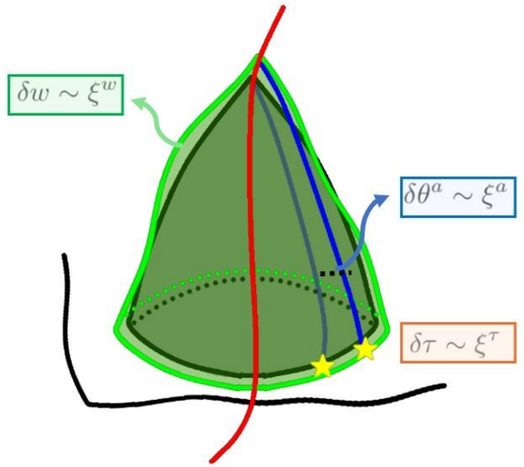
Finanziato dall'Unione europea NextGenerationEU
Ministero dell'Università e della Ricerca
Italiadomani PIANO NAZIONALE DI RIPRESA E RESILIENZA
INFN Istituto Nazionale di Fisica Nucleare

Gauge invariant relativistic effects in the Universe

Matheus Rodrigues Medeiros Silva (INFN-Pisa, Italy)

Over the years, my primary focus has been on developing mathematical techniques to investigate cosmological perturbation theory at non-linear regimes specifically adapted to a past light-cone description using the Geodesic Light-Cone gauge.

$$ds^2 = \Upsilon^2 dw^2 - 2\Upsilon dw d\tau + \gamma_{ab}\left(d\theta^a - U^a dw\right)\left(d\theta^b - U^b dw\right)$$



Gauge Invariant Velocity Potential

$$\xi^\tau = \int_{\eta_{in}}^{\eta} d\eta' \left[a\Phi + \partial_\eta (a\sigma)\right], \qquad \partial_w \xi^w$$

Integrated and Local Sachs-Wolfe effect

$$\begin{aligned}
\xi^w &= -(S_r + \sigma)_s^o - \int_\eta^{\eta_o} d\eta' \left(\Phi + \Psi - \sigma_r^{GI} - h_{rr}\right) + w_o \\
&= -(S_r + \sigma)_s^o + \delta w_{GI} + w_o, \\
\xi^a &= -\left(\bar{\gamma}^{ab} S_b\right)_s^o + \int_\eta^{\eta_o} d\eta' \left\{\bar{\gamma}^{ab}\left[\left(\sigma_b^{GI} + 2h_{rb} - D_b \delta w_{GI}\right)\right.\right. \\
&\quad \left.\left. - D_b (\sigma + S_r + w)^o\right]\right\} \\
D_a \xi^a &= -D^a \left(\frac{S_a}{r^2}\right)_s^o + \int_\eta^{\eta_o} \frac{d\eta'}{r^2}\left[D^a\left(\sigma_a^{GI} + 2h_{ra} - D_a \delta w_{GI}\right)\right. \\
&\quad \left. - D^2 (\sigma + S_r + w)^o\right] \qquad (4)
\end{aligned}$$

Lensing

Works in collaboration with Pierre Béchaz, Giuseppe Fanizza, Giovanni Marozzi and Tiziano Schiavone

PRIN Research grant number 2022E2J4RK "PANTHEON"

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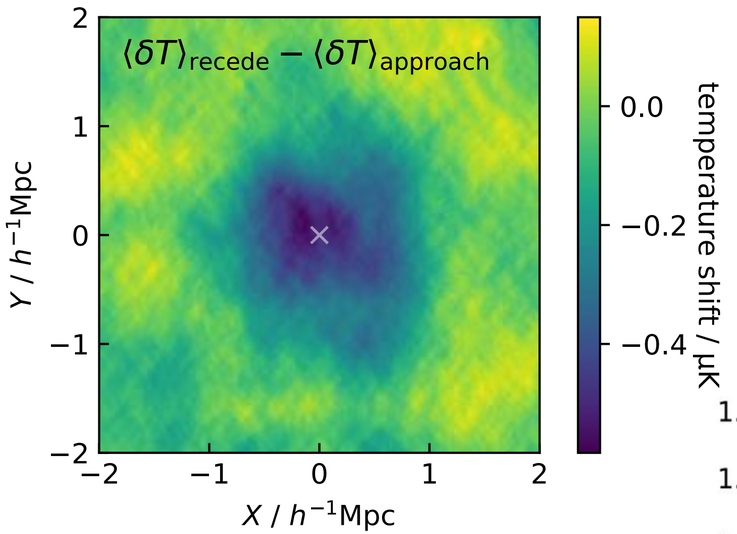
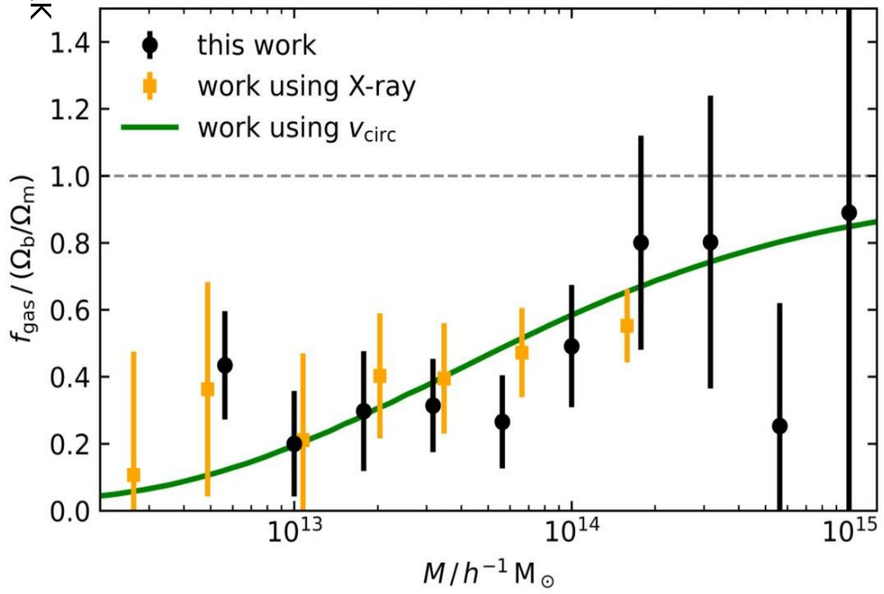
Stacking kSZ and other CMB secondary effects to constrain astrophysics



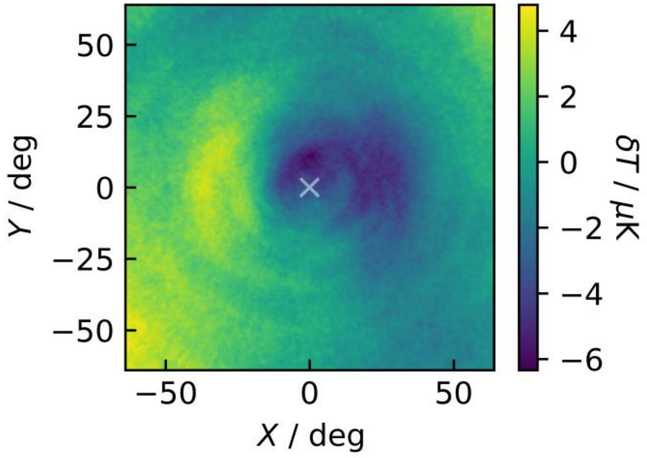
Stacking over groups, accounting for (reconstructed) LoS velocities and comparing to forward model in mass bins.

Using kSZ measure e.g. f_{gas}



Other secondaries

Or orientating to transverse velocity:



This is showing the ISW effect.

Advanced School on Precision Cosmology and Dark Matter,
The Galileo Galilei Institute for Theoretical Physics,
25-29 August 2025

Giona Sala

gsala@physik.rwth-aachen.de

Position: 2nd year of PhD

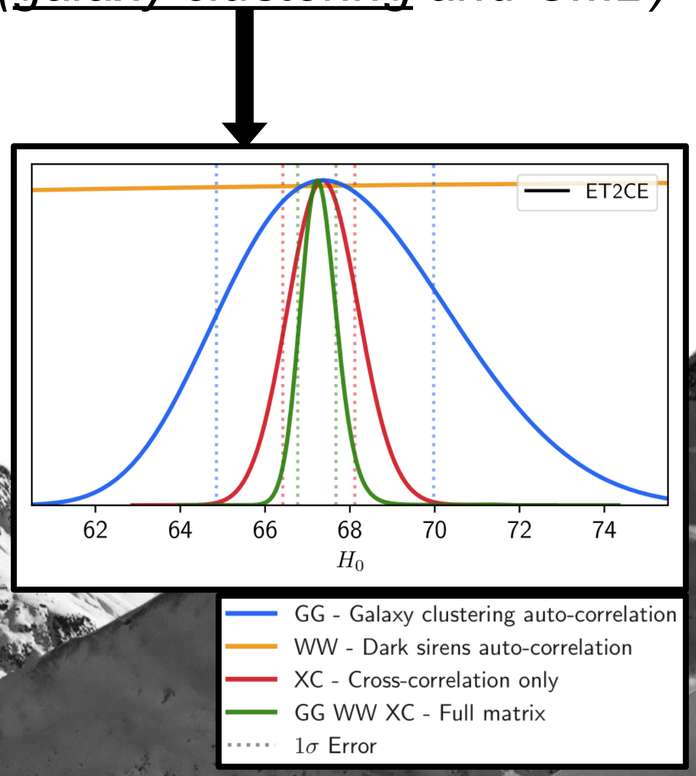
Institute: RWTH Aachen

Supervisor: Julien Lesgourgues

Topic: GW cosmology

RESEARCH INTERESTS

- PBH phenomenology in late universe
  - Master's thesis on PBH clustering
- Hubble tension and GW:
  - Multi-messenger astronomy with white dwarf binaries
  - *Cross-correlation between dark sirens and electromagnetic probes (galaxy clustering and CMB)*
- GW background
  - Separation of GWB components



Oleg Savchenko

PhD candidate, soon starting my 4th year
Supervisor: Christoph Weniger

Things I work on:

- Simulation-based inference
- Field-level inference
- Reconstruction of initial conditions
- Emulators

Universiteit van Amsterdam

GRAPPA
GRavitation AstroParticle Physics Amsterdam

Let me know of any interesting postdoc opportunities 🙂

Florence, 26th Aug 2025

o.savchenko@uva.nl

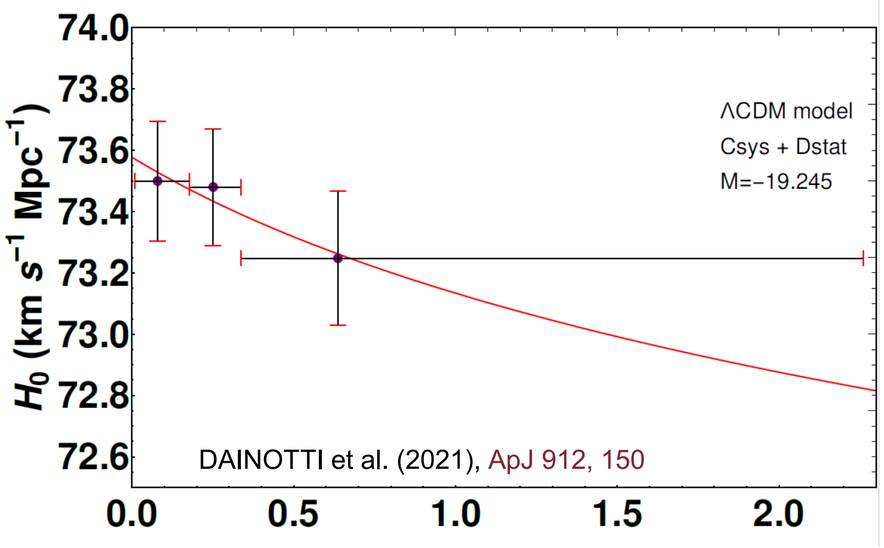
CSIC Institute of Space Sciences | EXCELENCIA MARÍA DE MAEZTU

TIZIANO SCHIAVONE

Fondazione Angelo Della Riccia

Postdoctoral Fellowship 2025

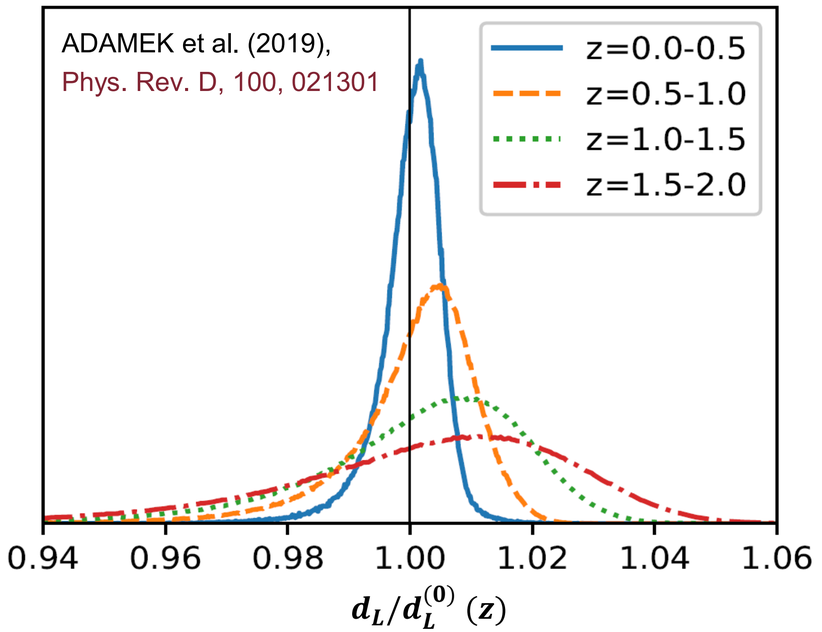
- Theoretical studies in modified gravity, the LSS, and cosmological perturbation theory.
- Cosmological parameter estimation using MCMC methods.
- Boltzmann solver (CLASS and CLASS-PT).



Research topics

❑ **MODIFIED GRAVITY THEORIES AND COSMIC EXPANSION**

Cosmological models based on $f(R)$ modified gravity theories in the late Universe to address the Hubble tension, matching incompatible measurements of H_0 from different probes via an effective Hubble constant $H_0^{\mathrm{eff}}(z)$.



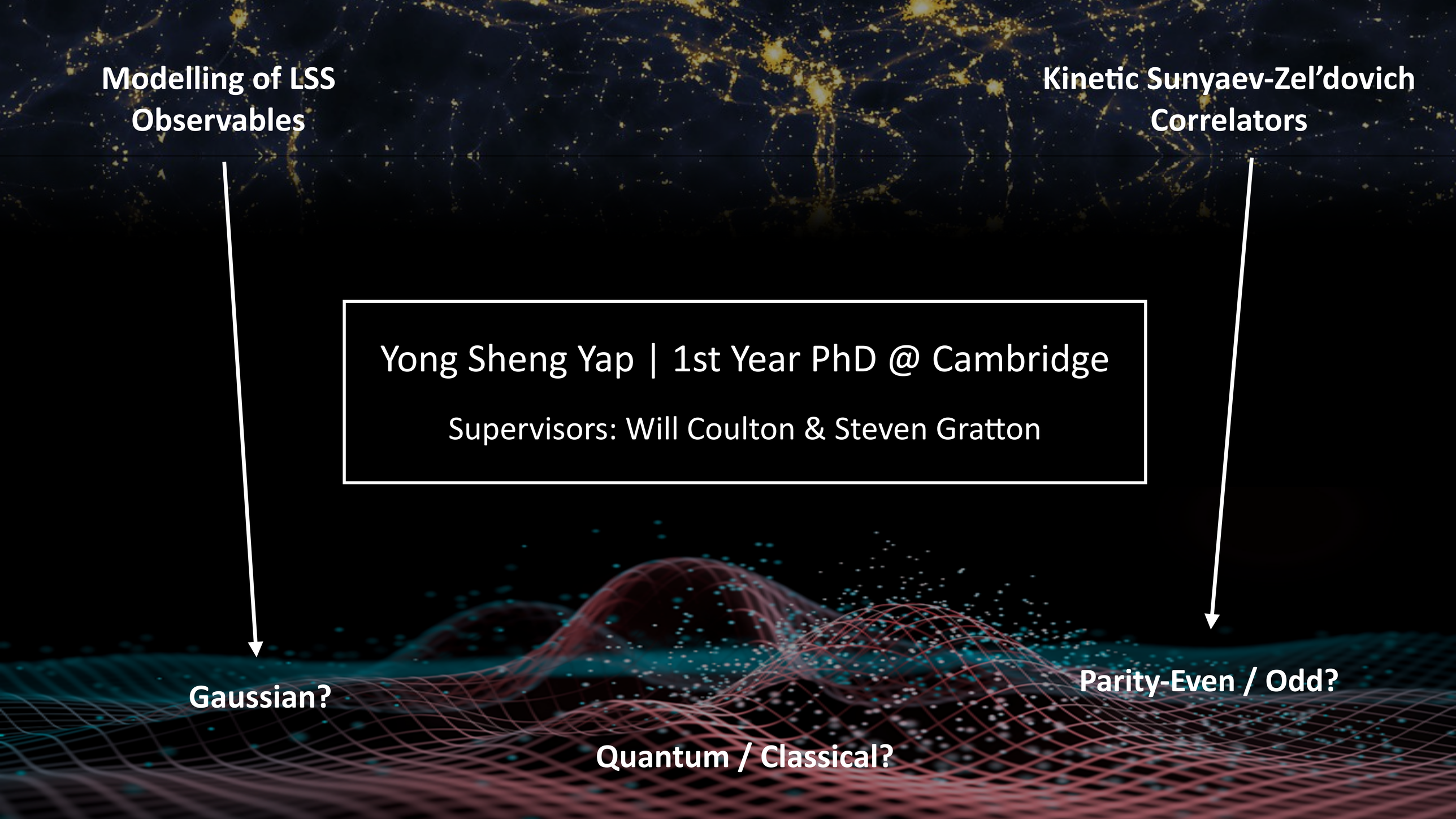
❑ **THE LARGE-SCALE STRUCTURE OF THE UNIVERSE AND PHOTON PROPAGATION**

Inhomogeneous cosmological models (LTB metric).

Impact of local inhomogeneities on cosmological observables.

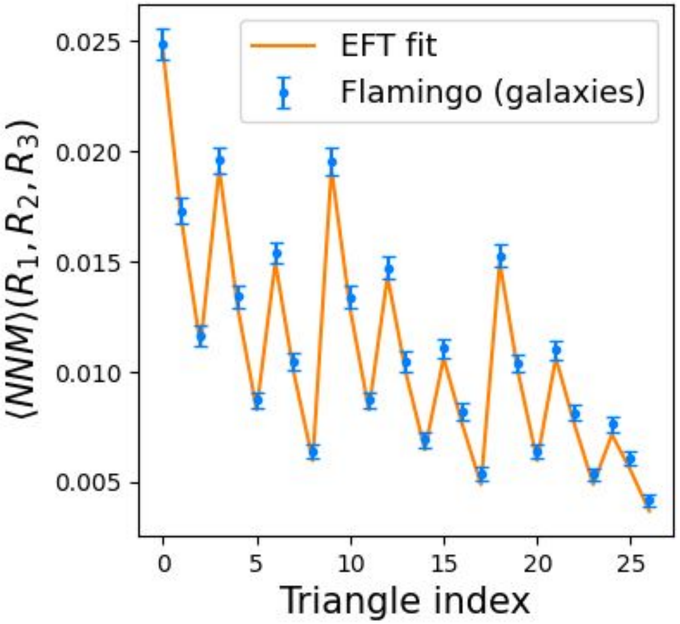
The skewness of the distance-redshift relation.

Non-gaussianities in the Hubble-Lemaitre diagram.


Modelling of LSS Observables
Kinetic Sunyaev-Zel'dovich Correlators
Yong Sheng Yap | 1st Year PhD @ Cambridge
Supervisors: Will Coulton & Steven Gratton
Gaussian?
Parity-Even / Odd?
Quantum / Classical?

Casper Vedder: 3-point statistics of galaxy shapes

- PhD student @ Leiden University (NL), supervised by **Henk Hoekstra** and **Elisa Chisari**
- **Interest**: Modelling the LSS to extract fundamental physics (Higher order statistics, shape correlations, baryons, ...)
- Galaxy shape correlations: **gravitational lensing** or **intrinsic alignments (IA)** with the local tidal field. If fields are nonlinear, information leaks into higher-order statistics like the 3-point function, which we aim to extract.
- **Current project:** Measuring the real-space IA signal of galaxies in the **FLAMINGO** hydro simulation and modeling it using the **EFT of IA** (Vlah+ 2019, Bakx+ 2025).
- **Previous work**: fluctuating dark energy (2209.00440) and cluster alignment (2011.06904)



Francesco Verdiani

(Was) local here! Did all my undergrad in Florence

Now: PhD student at SISSA, Trieste

Studying LSS/late time cosmology:

- ✦ Theoretical modeling of galaxy clustering and massive neutrinos
  (with E. Sefusatti, M. Viel, E. Bellini, C. Moretti...)

- ✦ Constraining (BSM motivated) DM properties with galaxies
  (with E. Castorina, D. Redigolo, E. Salvioni)

- ✦ Beyond P_{gg}^{3D}: cross-correlations with CMB lensing, emulators...
  (with L. Harscouet, M. Zennaro, D. Alonso)

中国科学技术大学

University of Science and Technology of China

John Zhiyu Lu

Phd third year

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Research Interest

EFTofLSS

- 2pt, 3pt, 4pt
- Dark Energy
- Neutrino Hubble tension

Recent Work

[arxiv: 2503.04602]