

# Zhengyangguang Gong

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## Research Interests

Weak gravitational lensing and large-scale structure of the Universe; Machine learning applications to cosmology

## Education

### Max Planck Institute for extraterrestrial Physics (MPE)

PhD in Astronomy Jan 2022 – expected May 2025  
Mentors: Prof. Ralf Bender, Dr. Stella Seitz.

### Ludwig-Maximilians-Universität München (LMU)

MSc in Astrophysics Oct 2019 – Dec 2021  
Thesis: Constraining Neutrino Masses with Weak Lensing Convergence 2-point Correlation Function  
Mentors: Prof. Ralf Bender, Dr. Stella Seitz.

### The University of Hong Kong (HKU)

BSc in Physics, minor in Astronomy & Mathematics Sep 2015 – May 2019  
Thesis: Radio Polarization Study of the Pulsar Wind Nebula Powered by PSR J1016-5857  
Mentor: Prof. Stephen Chi Yung NG

## Selected Talks

### YITP International molecule-type workshop: Theory and Data Analysis Challenges for Cosmological Large-Scale Structure Observations

Nov 2024

**In-person contributed talk:** Clustering of critical points for weak lensing in 2D mildly non-Gaussian random fields

### Cambridge–LMU meeting 2024

Oct 2024

**In-person contributed talk:** C3NN: Probing the large-scale structure with interpretable machine learning framework

### New Strategies for Extracting Cosmology from Galaxy Surveys - 2nd edition

Jul 2024

**In-person contributed talk:** C3NN and its interpretability in cosmology

### Barcelona2024–Dark Energy Survey (DES) annual meetings

May 2024

**In-person contributed talk:** C3NN and the integrated 3-point correlation function

	<b>GCCL seminar, German Centre for Cosmological Lensing</b>	April 2023
	<b>Online presentation:</b> Cosmology from the integrated 3-point correlation function	
Honors & Scholarships	SIST LMU Study Scholarship (LMU international office)	2020
	Silver Medal (University Physics Competition)	2017
	Lam Chi Him Memorial Prize in Physics (HKU Physics Department)	2016
Teaching & Supervision	<b>Master thesis supervision</b>	Jan 2024 - expected Mar 2025
	Cosmological constraints from weak lensing convergence scattering transform coefficients Joint supervision with Dr. Stella Seitz of master student Sijin Chen.	
	<b>Lab manual design</b>	Aug 2022
	17127 Astrophysical lab with exercises Design, writing and coding for the lab manual on weak gravitational lensing.	
	<b>Bachelor thesis supervision</b>	Apr 2022 - Sep 2022
	Fast cosmological parameter constraints with estimated likelihood using deep learning Supervision of student Xiomara Runge.	
	<b>Bachelor program lab supervision</b>	May 2021
	Bachelor physics lab P3A Beugung Student supervisor.	
Skills	<b>Programming</b>	
	Proficient in: Python, Pytorch, Tensorflow. Familiar with: C++, Mathematica.	
	<b>Software</b>	
	Proficient in: CLASS, GPflow, Cosmopower Familiar with: CAMB, Healpy, TreeCorr, LensTools, FLASK, MADLens	
	<b>Experience working with simulation data</b>	
	MassiveNuS (Liu et al. (2017)) Full-sky Gravitational Lensing Mock Catalogs (Takahashi et al. (2017)) CosmogridV1 (Kacprzak et al. (2022))	