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 Seminars & Conferences

Presentations

Cambridge–LMU meeting 2024 — Oct 2024
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
contributed talk: C3NN and its interpretability in cosmology

Barcelona2024–Dark Energy Survey (DES) annual meetings — May 2024
contributed talk: C3NN and the integrated 3-point correlation function

Paris CEA–Saclay cosmology seminar — Nov 2023
contributed talk: Cosmology from the integrated 3-point correlation function

GCCL seminar, German Centre for Cosmological Lensing April 2023
contributed talk: 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

Master thesis supervision 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.

Lab manual design Aug 2022
17127 Astrophysical lab with exercises
Design, writing and coding for the lab manual on weak gravitational lensing.

Bachelor thesis supervision Apr 2022 - Sep 2022
Fast cosmological parameter constraints with estimated likelihood using deep learning
Supervision of student Xiomara Runge.

Bachelor program lab supervision May 2021
Bachelor physics lab P3A Beugung
Student supervisor.

Skills

Programming

Proficient in: Python, Pytorch, Tensorflow.
Familiar with: C++, Mathematica.

Software
Proficient in: CLASS, GPflow, Cosmopower
Familiar with: CAMB, Healpy, TreeCorr, LensTools, FLASK, MADLens

Experience working with simulation data
MassiveNuS (Liu et al. (2017))
Full-sky Gravitational Lensing Mock Catalogs (Takahashi et al. (2017))
CosmogridV1 (Kacprzak et al. (2022))