



Nhat-Minh Nguyen, PhD

Astrophycist, Cosmologist, Leinweber Research Fellow

Webpage ORCID GitHub LinkedIn Twitter

Affiliation

Research fellow at Leinweber Center for Theoretical Physics, Department of Physics, LSA College, University of Michigan.

Research Interest

Large-scale Structure and Cosmic Microwave Background.

Expertise

Field-level, forward-model of galaxy clustering and galaxy intrinsic shape alignment; kinematic Sunyaev-Zel'dovich effect; growth of structure; sampling methods for Bayesian inference.

Education

2016 – 2020, PhD

International Max Planck Research School on Astrophysics

Max Planck Institute for Astrophysics, Garching near Munich
Ludwig Maximilians University of Munich

2014–2016, MSc

Erasmus Joint Master Degree in Astronomy & Astrophysics

University of Göttingen
University of Rome, Tor Vergata
University of Innsbruck

2008–2013, BSc

Physics and Theoretical Physics (Honor program)

Ho Chi Minh University of Science

Publications

First, co-first, or second author
(with equal or significant
contributions)

2023

Sweeping through Horndeski Canvas: a New Growth-Rate Parameterization for Modified-Gravity Theories. Wen¹, NM¹, Huterer. JCAP09(2023)028.

2023

Evidence for suppression of structure growth in the concordance cosmological model. NM¹, Huterer, Wen. Phys. Rev. Lett. 131, 111001. **Editor's Suggestion.** APS' outreach to the press.

2022

Consistency tests of field level inference with the EFT likelihood. Kostić¹, NM², Schmidt, Reinecke. JCAP07(2023)063.

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| 2021 | Field-level inference of galaxy intrinsic alignment from the SDSS-III BOSS survey. Tsaprazi ¹ , NM ¹ , et al. JCAP08(2022)003 |
| 2021 | Impacts of the physical data model on the forward inference of initial conditions from biased tracers. NM et al. JCAP03(2021)058. |
| 2020 | Taking measurements of the kinematic Sunyaev-Zel'dovich effect forward: including uncertainties from velocity reconstruction with forward modeling. NM et al. JCAP12(2020)011. |
| Co-author | A mock data friendly discussion for beyond-2pt statistics , aka the Beyond-2pt blind data challenge. Alphabetical order. In prep. |
| 2023 | Exploring the Growth Index γ_L: Insights from Different CMB Dataset Combinations and Approaches. Specogna et al. arxiv preprint. Under review for publications in Physical Review D (PRD). |
| 2023 | Cosmology Inference from Biased Tracers using the EFT-based Likelihood. Elsner et al. JCAP01(2020)029. |
| 2019 | A rigorous EFT-based forward model for large-scale structure. Schmidt et al. JCAP01(2019)042. |
| 2018 | |

Languages

English, Vietnamese, Python, C++, Fortran, Bayesian

(Post-COVID19) Talks & Visits

Cosmology from Home, online conference and Youtube, July 2023.
 CD3 Opening Symposium, Kavli IPMU, Kashiwa-no-ha, April 2023.
 Future Science with CMB x LSS workshop, YITP, Kyoto, April 2023.
 Cosmology Talks, Youtube, Mar 2023.
 TACOS seminar, Arizona Cosmology Lab, University of Arizona, February 2023. (During the "Beyond 2-point data challenge" workshop.)
 Aspen workshop on "Large-Scale Structure Cosmology beyond 2-Point Statistics", June 2022. (My first-ever invited blackboard talk!)
 Astro Lunch Seminar, Kavli IPMU, May 2022.
 KIPAC Cosmology Seminar, Stanford, May 2022.
 Berkeley Cosmology Group Seminar, Berkeley Center for Cosmological Physics, April 2022.
 NYU-CCA Cosmology x Data Science Meeting, New York University-Flatiron Institute (remote), March 2021.
 OPINAS Group Meeting, Max-Planck-Institut für extraterrestrische Physik (remote), March 2021.
 Cosmology & Gravitation Group Meeting, Oskar Klein Centre (remote), February 2021.
 "The Origin and Evolution of Large-Scale Structure" Science Afternoon, Excellence Cluster ORIGINS (remote), February 2021.
 CosmoLunch Meeting, Institute of Advanced Study, Princeton (remote), January 2021.
 Universe Journal Club, Institut d'astrophysique de Paris (remote), December 2020.
 Cosmology Seminar, Max-Planck-Institut für Astrophysik (remote), December 2020..
 Astroparticle Physics Seminar, SISSA (remote), December 2020.
 Cosmology Group Meeting, Perimeter Institute (remote), December 2020.
 Cosmology Seminar, University of Manchester (remote), December 2020.

Mentoring & Advising

Mentoring

Carter Matties (Undergraduate student, University of Michigan).
Madeline Fredericks (Undergraduate student, University of Michigan).
Andrja Kostić (PhD student, Max Planck Institute for Astrophysics), co-mentored.

Advising on a research project

Eleni Tsaprazi (PhD student, Stockholm University).

Activities

Professional Community Service

2023

Michigan Cosmology Summer School 2023, Local Organizing Committee member.

2021–now

Active referee for JCAP & PRD.

Professional Institute and Group

Service

2021–2022

VLLT Joint Astronomy & Physics Seminar Series (for junior graduate and senior undergraduate students in Physics & Astronomy in Vietnam), event founder and co-organizer.

2022–now

Cosmology Journal Club and **Group Meeting** (University of Michigan), main organizer. **Cosmology Book Club** (University of Michigan), co-organizer.

2020–2021

Cosmology Book Club (Max Planck Institute for Astrophysics), event founder & main organizer.

2018–2020

Large-scale Structure Journal Club (joint between Max Planck Institute for Astrophysics and Max Planck Institute for Extraterrestrial Physics), co-organizer.

Social & Outreach

2023

Ask-Me-Anything on Reddit r/askscience and Youtube, Cosmology from Home 2023, panelist.

2023

Michigan Math and Science Scholars, guest lecturer.

2022–now

Institute Social Coffee (Leinweber Center for Theoretical Physics), event founder & co-organizer.

2022–now

Skype a Scientist (science outreach and interview with students of all ages and backgrounds in the US), scientist participant.