

Dhong Yeon Cheong

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AFFILIATION AND EDUCATION

The University of Chicago *October 2025 - Present*
Joint Fermi/KICP Fellow, Enrico Fermi Institute & Kavli Institute for Cosmological Physics

Yonsei University, Department of Physics *March 2019 - August 2025*
M.S.- Ph.D. Integrated Program (Advisor : Seong Chan Park)
(Compulsory military duty, Technical Research Personnel, ROK : March 1st, 2022 - June 18th, 2025)

CERN, Theoretical Physics Department *July 2023 - January 2024*
CERN-CKC Graduate Student Fellow (Host : Nicholas Rodd)

KIAS, School of Physics *September 2021- February 2022*
Visiting Student Research Assistant

Yonsei University, Department of Physics *March 2015 - February 2019*
B.S. in Physics

PUBLICATIONS [INSPIRE-HEP]

- 2510.05198** **Intrinsically Quantum Effects of Axion Dark Matter are Undetectable**
Y. Bao, DYC, N. L. Rodd, J. Takach, L.-T. Wang, K. Zhou
- 2509.04105** **Beyond the Starobinsky model after ACT**
DYC, M.G. Park, S. C. Park
- 2506.06655** **Composite Hybrid Inflation :
Primordial Black Holes and Stochastic Gravitational Waves**
G. Cacciapaglia, DYC, A. Deandrea, W. Isnard, S. C. Park, X. Wang, Y.-l Zhang
- 2411.07713** **Wormhole-Induced ALP Dark Matter**
DYC, K. Hamaguchi, Y. Kanazawa, S. M. Lee, N. Nagata, S. C. Park, JHEP 02 (2025) 183
- 2408.04696** **A Quantum Description of Wave Dark Matter**
DYC, N. L. Rodd, L. T. Wang, Phys.Rev.D 111 (2025) 1, 015028
- 2310.11260** **Effective Theory Approach for Axion Wormholes**
DYC, S. C. Park, C. S. Shin, JHEP 07 (2024) 039
- 2307.01852** **Composite Hybrid Inflation : Dilaton and Waterfall Pions**
G. Cacciapaglia, DYC, A. Deandrea, W. Isnard, S. C. Park, JCAP 10 (2023) 063
- 2210.11330** **Axion Quality Problem and Non-Minimal
Gravitational Coupling in the Palatini Formulation**
DYC, K. Hamaguchi, Y. Kanazawa, S. M. Lee, N. Nagata, S. C. Park,
Phys. Rev. D 108, 015007

2206.00890	Phenomenological implications on a hidden sector from the Festina Lente bound K. Ban, <u>DYC</u> , H. Okada, H. Otsuka. J. C. Park, S. C. Park, PTEP 2023 (2023) 1, 013B04,
2205.14813	The Inflaton that Could : Primordial Black Holes and Second Order Gravitational Waves from Tachyonic Instability induced in Higgs-R^2 Inflation <u>DYC</u> , K. Kohri, S. C. Park, JCAP 10 (2022) 015
2111.04010	Festina-Lente Bound on Higgs Vacuum Structure and Inflation S. M. Lee, <u>DYC</u> , S. C. Hyun, S. C. Park, M. Seo, JHEP 02 (2022) 100
2111.00825	Reheating in Models with Nonminimal Coupling in metric and Palatini formalisms <u>DYC</u> , S. M. Lee, S. C. Park, JCAP 02 (2022) 02, 029
2103.00177	Progress in Higgs inflation <u>DYC</u> , S. M. Lee, S. C. Park, J. Korean Phys. Soc. (2021), (Invited Review)
2002.07981	Beyond the Starobinsky model for inflation <u>DYC</u> , H. M. Lee, S. C. Park, Phys. Lett. B 805 (2020) 13545
1912.12032	Primordial Black Holes in Higgs-R^2 Inflation as a whole dark matter <u>DYC</u> , S. M. Lee, S. C. Park, JCAP 01 (2021) 032
1811.03622	Higgs Inflation and the Refined dS Conjecture <u>DYC</u> , S. M. Lee, S. C. Park, Phys. Lett. B 789 (2019) 336-340

AWARDS AND FELLOWSHIPS

Enrico Fermi & KICP Fellowship , The University of Chicago	<i>October 2025 - August 2028</i>
Merit Academic Paper Award , Yonsei University Academic paper award for [2210.11330]	<i>July 2024</i>
KPS Encouragement Award , Korean Physical Society Annual award for selective graduate students, award for [2103.00177]	<i>October 2023</i>
CERN-CKC Graduate Student Fellowship Full support, 6 month visit at CERN TH	<i>July 2023 - January 2024</i>
Best Poster Award , Department of Physics, Yonsei University Poster on Yonsei HEP-COSMO recent research outputs	<i>September 2022</i>
Outstanding Presentation Award , Korean Physical Society Spring Meeting 2022 Talk on “Gravitational Waves and PBHs from Tachyonic Instability in Higgs- R^2 Inflation”	<i>July 2022</i>
ARF Independent Research Grant , Yonsei University Research grant on “PBHs and GWs as Phenomenological Probes of Inflation”	<i>August 2021 - December 2022</i>
Best Poster Award , SI 2019 Poster on “Criticality and Primordial Black Holes in Higgs- R^2 Inflation”	<i>August 2019</i>
B.S. - Ph.D. Integrated Scholarship , Yonsei University Full scholarship for 5 semesters	<i>March 2019 - August 2021</i>
National Science & Technology Scholarship Korea Student Aid Foundation, full scholarship for 2 years	<i>March 2017 - February 2019</i>

RESEARCH INTERESTS

General : Early Universe Cosmology, Dark Matter, Beyond the Standard Model Phenomology
Specific : Axions, Ultralight Dark Matter, Inflation, Primordial Black Holes & Gravitational Waves

TALKS & PRESENTATIONS

UIC High Energy Theory Seminar	<i>Nov 2025</i>
Invited talk on “A Quantum Description of Axion Dark Matter Detection”	
PIKIMO 19	<i>Nov 2025</i>
Contributed talk on “A Quantum Description of Axion Dark Matter Detection”	
29th International Summer Institute on Phenomenology of Elementary Particle Physics and Cosmology (SI 2025)	<i>Aug 2025</i>
Contributed talk on “A Quantum Description of Wave Dark Matter”	
The strong CP problem and its possible solutions : Pollica Physics	<i>Jun 2025</i>
Contributed talk on “A Quantum Description of Wave Dark Matter”	
2025 APCTP-IBS FRP: The origin and evolution of the Universe	<i>Jun 2025</i>
Invited talk on “A Quantum Description of Wave Dark Matter”	
KAIST High-Energy Theory Seminar	<i>May 2025</i>
Invited talk on “A Quantum Description of Wave Dark Matter”	
KIAS Particle Physics Seminar	<i>Jan 2025</i>
Invited talk on “A Quantum Description of Wave Dark Matter”	
Dark Matter as a Portal to New Physics 2025	<i>Jan 2025</i>
Invited Talk on “Wormhole Induced ALP DM”	
CTPU-CKC Joint Focus Program: Let there be light (particles) Workshop	<i>Dec 2024</i>
Invited talk on “A Quantum Description of Wave Dark Matter”	
High Energy Phenomenology and COsmology Webinar , IPM, Iran	<i>Nov 2024</i>
Invited talk on “A Quantum Description of Wave Dark Matter”	
The 12th KIAS Workshop on Particle Physics and Cosmology	<i>Nov 2024</i>
Talk on “Wormhole Induced ALP DM”	
Fermilab Theory Division Chalk Talk	<i>Nov 2024</i>
Blackboard Talk on “A Quantum Description of Wave Dark Matter”	
University of Chicago Particle Physics/Cosmo Journal Club	<i>Nov 2024</i>
Talk on “A Quantum Description of Wave Dark Matter”	
UC Berkeley 4D Seminar	<i>Nov 2024</i>
Talk on “A Quantum Description of Wave Dark Matter”	
KPS Fall Meeting 2024	<i>Oct 2024</i>
Talk on “Wormhole Induced ALP DM”	
JBNU Seminar	<i>Oct 2024</i>
Invited Talk on “A Quantum Description of Wave Dark Matter”	
SSU 2024	<i>Jul 2024</i>
Talk on “A Quantum Description of Wave Dark Matter”	
Workshop on Dark Universe	<i>Jan 2024</i>
Talk on “An Effective Approach for Axion Wormholes”	
Dark Matter as a Portal to New Physics 2024	<i>Jan 2024</i>
Invited Talk on “PBHs and GWs in Higgs- R^2 Inflation”	
CosKASI ECR Seminar	<i>Nov 2023</i>
Invited Talk on “Inflation and the Standard Model : Higgs- R^2 Inflation Framework”	
OKC@15	<i>Oct 2023</i>
Talk on “Primordial Black Holes and Gravitational Waves in Higgs- R^2 Inflation”	
CERN Cosmo Ice Cream	<i>Oct 2023</i>
Informal blackboard talk on “An Effective Approach for Axion Wormholes”	
DESY Theory Workshop 2023	<i>Sep 2023</i>
Talk on “An Effective Approach for Axion Wormholes”	
PPC 2023	<i>Jun 2023</i>
Talk on “Composite Dilaton Inflation”	
2023 Winter-1 NRF-JSPS Workshop in particle physics, cosmology, and gravitation	<i>Jan 2023</i>
Invited Talk on “PBHs, GWs, and the Standard Model: Higgs- R^2 Inflation Framework”	
100+7 GR & Beyond: Inflation	<i>Dec 2022</i>
Invited Talk on “PBHs, GWs, and the Standard Model: Higgs- R^2 Inflation Framework”	

IBS-PNU Joint Workshop on Particle Physics and Cosmology	<i>Dec 2022</i>
Talk on “PBHs and GWs from the Tachyonic Instability in Higgs- R^2 Inflation”	
Korea-Japan Workshop on Dark Energy (9th edition)	<i>Nov 2022</i>
Talk on “PBHs and GWs from the Tachyonic Instability in Higgs- R^2 Inflation”	
Workshop on Physics of Dark Cosmos	<i>Oct 2022</i>
Talk on “PBHs and GWs from the Tachyonic Instability in Higgs- R^2 Inflation”	
KPS Fall Meeting 2022	<i>Oct 2022</i>
Talk on “Axion Quality problem and Non-minimal Gravitational Coupling in the Palatini Formulation”	
LIO International Conference and France-Korea STAR Workshop on ”Fundamental Forces from Colliders to Gravitational Waves”	<i>Jun 2022</i>
Talk on “Tachyonic Production of GWs in Higgs- R^2 Inflation”	
KPS Spring Meeting 2022	<i>Apr 2022</i>
Talk on “Gravitational Waves and PBHs from Tachyonic Instability in Higgs- R^2 Inflation”	
Asia-Pacific School and Workshop on Gravitation and Cosmology 2022	<i>Mar 2022</i>
Talk on “Primordial Black Holes and GWs in Higgs- R^2 Inflation”	
Workshop on Particle Physics and Cosmology 2021	<i>Nov 2021</i>
Talk on “Primordial Black Holes and Gravitational Waves in Higgs- R^2 Inflation”	
Asia-Pacific Workshop on Particle Physics and Cosmology 2021	<i>Aug 2021</i>
Talk on “Filling the Gap : (Perturbative) Reheating in Higgs- R^2 Inflation”	
Online JGRG workshop 2020	<i>Nov 2020</i>
Talk on “Primordial Black Holes as Dark Matter in Higgs- R^2 Inflation”	
LIO international conference on Composite connections of Higgs, Dark Matter and Neutrinos	<i>Sep 2020</i>
Talk on “Primordial Black Holes in Higgs- R^2 Inflation”	
KPS Spring Meeting 2020	<i>Jul 2020</i>
Talk on “Beyond the Starobinsky Model for Inflation”	
25th International Summer Institute on Phenomenology of Elementary Particles and Cosmology (SI 2019)	<i>Aug 2019</i>
Poster on “Criticality and Primordial Black Holes in Higgs- R^2 Inflation”	
KPS Spring Meeting 2019	<i>Apr 2019</i>
Talk on “Higgs Inflation and the Refined dS Conjecture”	
The 2nd KMI School (KMI School 2019)	<i>Feb 2019</i>
Poster on “Higgs Inflation and the Refined dS Conjecture”	

PARTICIPATED SCHOOLS

KIAS-QUC Summer School on “A.I. in High Energy Physics”	<i>Jul 2022</i>
2020 GGI Lectures on the Theory of Fundamental Interactions	<i>Jan 2020</i>
IBS Summer School on Cosmology & Particle Physics	<i>Jul 2019</i>
	<i>Jul 2018</i>

SERVICE

Referee : Journal of High Energy Physics (JHEP)	<i>2023 -</i>
KICP Funch Journal Club organizer	<i>Oct 2025 - Sep 2026</i>
Yonsei Cosmo Chalk organizer	<i>Jan 2024 - Aug 2025</i>

LANGUAGE

Korean - First language, native proficiency
English - Second language, native proficiency