

# Dhong Yeon Cheong

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## AFFILIATION AND EDUCATION

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**Yonsei University, Department of Physics**

*March 2019 - Present*

M.S.- Ph.D. Integrated Program (~ August 2025, Advisor : Seong Chan Park)

(Compulsory military duty, Technical Research Personnel, ROK : March 1st, 2022 - June 19th, 2025)

**CERN, Theoretical Physics Department**

*July 2023 - January 2024*

Visiting Student, CERN-CKC Graduate Student Fellowship (Host : Nicholas Rodd)

**KIAS, School of Physics**

*September 2021- February 2022*

Visiting Research Assistant

**Yonsei University, Department of Physics**

*March 2015 - February 2019*

B.S. in Physics

## PUBLICATIONS [\[INSPIRE-HEP\]](#)

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| <b>2408.04696</b> | <b>A Quantum Description of Wave Dark Matter</b><br><u>DYC</u> , N. L. Rodd, L. T. Wang  |
| <b>2310.11260</b> | <b>Effective Theory Approach for Axion Wormholes</b><br><u>DYC</u> , S. C. Park, C. S. Shin, JHEP 07 (2024) 039  |
| <b>2307.01852</b> | <b>Composite Hybrid Inflation : Dilaton and Waterfall Pions</b><br>G. Cacciapaglia, <u>DYC</u> , A. Deandrea, W. Isnard, S. C. Park, JCAP 10 (2023) 063  |
| <b>2210.11330</b> | <b>Axion Quality Problem and Non-Minimal Gravitational Coupling in the Palatini Formulation</b><br><u>DYC</u> , K. Hamaguchi, Y. Kanazawa. S. M. Lee, N. Nagata, S. C. Park, Phys. Rev. D 108, 015007                        |
| <b>2206.00890</b> | <b>Phenomenological implications on a hidden sector from the Festina Lente bound</b><br>K. Ban, <u>DYC</u> , H. Okada, H. Otsuka. J. C. Park, S. C. Park, PTEP 2023 (2023) 1, 013B04,  |
| <b>2205.14813</b> | <b>The Inflaton that Could : Primordial Black Holes and Second Order Gravitational Waves from Tachyonic Instability induced in Higgs-<math>R^2</math> Inflation</b><br><u>DYC</u> , K. Kohri, S. C. Park, JCAP 10 (2022) 015 |
| <b>2111.04010</b> | <b>Festina-Lente Bound on Higgs Vacuum Structure and Inflation</b><br>S. M. Lee, <u>DYC</u> , S. C. Hyun, S. C. Park, M. Seo, JHEP 02 (2022) 100   |
| <b>2111.00825</b> | <b>Reheating in Models with Nonminimal Coupling in metric and Palatini formalisms</b><br><u>DYC</u> , S. M. Lee, S. C. Park, JCAP 02 (2022) 02, 029  |

<b>2103.00177</b>	<b>Progress in Higgs inflation</b> <u>DYC</u> , S. M. Lee, S. C. Park, J. Korean Phys. Soc. (2021), (Invited Review)
<b>2002.07981</b>	<b>Beyond the Starobinsky model for inflation</b> <u>DYC</u> , H. M. Lee, S. C. Park, Phys.Lett.B 805 (2020) 13545
<b>1912.12032</b>	<b>Primordial Black Holes in Higgs-<math>R^2</math> Inflation as a whole dark matter</b> <u>DYC</u> , S. M. Lee, S. C. Park, JCAP 01 (2021) 032
<b>1811.03622</b>	<b>Higgs Inflation and the Refined dS Conjecture</b> <u>DYC</u> , S. M. Lee, S. C. Park, Phys. Lett. B789 (2019) 336-340

## AWARDS AND SCHOLARSHIPS

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

## RESEARCH INTERESTS

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

## TALKS & PRESENTATIONS

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<b>High Energy Phenomenology and COsmology Webinar</b> , IPM, Iran Invited talk on “A Quantum Description of Wave Dark Matter” (Scheduled)	<i>Nov 2024</i>
<b>Fermilab Theory Division Chalk Talk</b> Informal Blackboard Talk on “A Quantum Description of Wave Dark Matter” (Scheduled)	<i>Nov 2024</i>
<b>University of Chicago Particle Physics/Cosmo Journal Club</b> Talk on “A Quantum Description of Wave Dark Matter” (Scheduled)	<i>Nov 2024</i>
<b>UC Berkeley 4D Seminar</b> Talk on “A Quantum Description of Wave Dark Matter” (Scheduled)	<i>Nov 2024</i>
<b>KPS Fall Meeting 2024</b> Talk on “Wormhole Induced ALP DM” (Scheduled)	<i>Oct 2024</i>
<b>JBNU Seminar</b> Invited Talk on “A Quantum Description of Wave Dark Matter”	<i>Oct 2024</i>
<b>SSU 2024</b> Talk on “A Quantum Description of Wave Dark Matter”	<i>Jul 2024</i>

<b>Workshop on Dark Universe</b>	<i>Jan 2024</i>
Talk on “An Effective Approach for Axion Wormholes”	
<b>Dark Matter as a Portal to New Physics 2024</b>	<i>Jan 2024</i>
Invited Talk on “PBHs and GWs in Higgs- $R^2$ Inflation”	
<b>CosKASI ECR Seminar</b>	<i>Nov 2023</i>
Invited Talk on “Inflation and the Standard Model : Higgs- $R^2$ Inflation Framework”	
<b>OKC@15</b>	<i>Oct 2023</i>
Talk on “Primordial Black Holes and Gravitational Waves in Higgs- $R^2$ Inflation”	
<b>CERN Cosmo Ice Cream</b>	<i>Oct 2023</i>
Informal blackboard talk on “An Effective Approach for Axion Wormholes”	
<b>DESY Theory Workshop 2023</b>	<i>Sep 2023</i>
Talk on “An Effective Approach for Axion Wormholes”	
<b>PPC 2023</b>	<i>Jun 2023</i>
Talk on “Composite Dilaton Inflation”	
<b>2023 Winter-1 NRF-JSPS Workshop in particle physics, cosmology, and gravitation</b>	<i>Jan 2023</i>
Invited Talk on “PBHs, GWs, and the Standard Model: Higgs- $R^2$ Inflation Framework”	
<b>100+7 GR &amp; Beyond: Inflation</b>	<i>Dec 2022</i>
Invited Talk on “PBHs, GWs, and the Standard Model: Higgs- $R^2$ Inflation Framework”	
<b>IBS-PNU Joint Workshop on Particle Physics and Cosmology</b>	<i>Dec 2022</i>
Talk on “PBHs and GWs from the Tachyonic Instability in Higgs- $R^2$ Inflation”	
<b>Korea-Japan Workshop on Dark Energy (9th edition)</b>	<i>Nov 2022</i>
Talk on “PBHs and GWs from the Tachyonic Instability in Higgs- $R^2$ Inflation”	
<b>Workshop on Physics of Dark Cosmos</b>	<i>Oct 2022</i>
Talk on “PBHs and GWs from the Tachyonic Instability in Higgs- $R^2$ Inflation”	
<b>KPS Fall Meeting 2022</b>	<i>Oct 2022</i>
Talk on “Axion Quality problem and Non-minimal Gravitational Coupling in the Palatini Formulation”	
<b>LIO International Conference and France-Korea STAR Workshop on ”Fundamental Forces from Colliders to Gravitational Waves”</b>	<i>Jun 2022</i>
Talk on “Tachyonic Production of GWs in Higgs- $R^2$ Inflation”	
<b>KPS Spring Meeting 2022</b>	<i>Apr 2022</i>
Talk on “Gravitational Waves and PBHs from Tachyonic Instability in Higgs- $R^2$ Inflation”	
<b>Asia-Pacific School and Workshop on Gravitation and Cosmology 2022</b>	<i>Mar 2022</i>
Talk on “Primordial Black Holes and GWs in Higgs- $R^2$ Inflation”	
<b>Workshop on Particle Physics and Cosmology 2021</b>	<i>Nov 2021</i>
Talk on “Primordial Black Holes and Gravitational Waves in Higgs- $R^2$ Inflation”	
<b>Asia-Pacific Workshop on Particle Physics and Cosmology 2021</b>	<i>Aug 2021</i>
Talk on “Filling the Gap : (Perturbative) Reheating in Higgs- $R^2$ Inflation”	
<b>Online JGRG workshop 2020</b>	<i>Nov 2020</i>
Talk on “Primordial Black Holes as Dark Matter in Higgs- $R^2$ Inflation”	
<b>LIO international conference on Composite connections of Higgs, Dark Matter and Neutrinos</b>	
Talk on “Primordial Black Holes in Higgs- $R^2$ Inflation”	<i>Sep 2020</i>
<b>KPS Spring Meeting 2020</b>	<i>Jul 2020</i>
Talk on “Beyond the Starobinsky Model for Inflation”	
<b>25th International Summer Institute on Phenomenology of Elementary Particles and Cosmology (SI 2019)</b>	<i>Aug 2019</i>
Poster on “Criticality and Primordial Black Holes in Higgs- $R^2$ Inflation”	
<b>KPS Spring Meeting 2019</b>	<i>Apr 2019</i>
Talk on “Higgs Inflation and the Refined dS Conjecture”	
<b>The 2nd KMI School (KMI School 2019)</b>	<i>Feb 2019</i>
Poster on “Higgs Inflation and the Refined dS Conjecture”	

## PARTICIPATED SCHOOLS

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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

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Referee : Journal of High Energy Physics (JHEP)	<i>2023 -</i>
Yonsei Cosmo Chalk organizer	<i>Jan 2024 -</i>

## LANGUAGE

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