

# Minxi HE

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## EMPLOYMENT

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<b>Division of Science, National Astronomical Observatory of Japan</b> Position: Project Assistant Professor	2026-06 — present Host: Kazunori Kohri
<b>CTPU-PTC, Institute for Basic Science</b> Position: Senior Researcher	2023-09 — 2026-05
<b>Theory Center, IPNS, KEK</b> Position: Researcher	2021-10 — 2023-08 Host: Kyohei Mukaida
<b>University of Science and Technology of China</b> Visiting Scholar	2015-11 — 2016-07 Host: Yi-Fu Cai
<b>Hong Kong University of Science and Technology</b> Visiting Internship	2015-08 — 2015-10 Host: Yi Wang

## EDUCATION

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<b>The University of Tokyo</b> Ph.D. in Physics Thesis: <i>Origin of Big Bang in Mixed Higgs-<math>R^2</math> Inflation Model</i>	2018-09 — 2021-09 Supervisor: Jun'ichi Yokoyama
<b>The University of Tokyo</b> M.S. in Physics Thesis: <i>Inflation in the Mixed Higgs-<math>R^2</math> Model</i>	2016-09 — 2018-09 Supervisor: Jun'ichi Yokoyama
<b>University of Science and Technology of China</b> B.S. in Physics	2011-09 — 2015-06

## ACADEMIC VISITS

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<b>CERN</b> Visitor	2022-08-01 — 08-12 Host: Valerie Domcke
<b>Durham University</b> Visitor	2019-09-09 — 09-11 Hosts: Valentin Kohze, Fedor Bezrukov

## HONORS AND AWARDS

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<b>Outstanding Presentation Award, Gold Prize</b> 30th Workshop on General Relativity and Gravitation in Japan (JGRG30) Presentation title: <i>Reheating Process in Mixed Higgs-<math>R^2</math> Model</i>	2021-12
<b>JSPS Research Fellow DC1</b> Japan Society for the Promotion of Science (JSPS) Research proposal title: <i>Cosmological Consequences of Observationally Favored Inflationary Model</i> Research grant: 3,400,000 JPY	2019-04 — 2022-03
<b>Global Science Graduate Course (GSGC) Scholarship</b> School of Science, The University of Tokyo	2016-09 — 2021-09

## INVITED LECTURES

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<i>Lectures on Higgs Inflation and Unitarity</i> <b>Korea Institute for Advanced Study (KIAS)</b>	2024-04-01 — 04-05 Host: Pyungwon Ko
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## ACADEMIC SERVICE

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<b>Organizer for KEK Theory Meeting on Particle Physics Phenomenology (KEK-PH2022) and International Joint Workshop on the Standard Model and Beyond</b>	2022-11-29 — 12-02
<b>Referee for</b> <i>Journal of Cosmology and Astroparticle Physics, Physical Review D, European Physical Journal C, General Relativity and Gravitation, Gravitation and Cosmology, Nuclear Physics B, Chinese Physics C</i>	

## SEMINARS (\*=INVITED)

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<i>*Reheating dynamics in mixed Higgs-<math>R^2</math> model</i> <b>Jilin University, China (online)</b>	2025-11
<i>*Inflation and reheating dynamics in mixed Higgs-<math>R^2</math> model</i> <b>University of Electronic Science and Technology of China, China (online)</b>	2025-10
<i>Scalaron dynamics in Einstein—Cartan gravity</i> <b>Hunan Normal University, China</b>	2025-10
<i>Fire ball formation from evaporation of primordial black hole</i> <b>Great Bay University, China</b>	2025-10
<i>Regularized pole inflation and Einstein—Cartan gravity</i> <b>Hangzhou Institute for Advanced Study, China</b>	2025-09
<i>*Unitarity of Higgs inflation and UV extension (Video)</i> <b>Majorana-Raychaudhuri seminar series</b>	2025-09
<i>Geometry of target space and unitarity of Higgs inflation</i> <b>Westlake University, China</b>	2025-08
<i>Scalaron in Einstein–Cartan Gravity</i> <b>Jiangsu University of Science and Technology, China</b>	2025-08
<i>Scalaron in Einstein–Cartan Gravity</i> <b>University of Science and Technology of China, China</b>	2025-08
<i>Hotspot formation by evaporating primordial black holes</i> <b>Sun Yat-sen University, Shenzhen, China</b>	2025-07
<i>Hotspot formation by evaporating primordial black holes</i> <b>The Chinese University of Hong Kong, Shenzhen, China</b>	2025-07
<i>*Geometry of target space and unitarity of Higgs inflation</i> <b>Chung-Ang University, South Korea</b>	2025-03
<i>Fire Balls from Primordial Black Hole Explosion</i> <b>Institute of Theoretical Physics, Chinese Academy of Science, China</b>	2023-05
<i>Making Fire Balls from Primordial Black Holes</i> <b>Tsung-Dao Lee Institute, China (online)</b>	2023-03
<i>*Hot Spot Created by Primordial Black Holes</i> <b>University of California, Los Angeles, USA (online)</b>	2023-02
<i>Creating a Hot Spot around a Primordial Black Hole</i> <b>École Normale Supérieure, France (online)</b>	2022-12
<i>Reheating in the mixed Higgs-<math>R^2</math> model</i> <b>Perimeter Institute for Theoretical Physics, Canada (online)</b>	2020-11
<i>*Preheating in the Mixed Higgs-<math>R^2</math> Model</i> <b>Yonsei University, South Korea (online)</b>	2020-08
<i>Rotation and Formation Threshold of Primordial Black Holes</i> <b>Sun Yat-sen University, China</b>	2019-09
<i>*Inflation and Preheating in the Mixed Higgs-<math>R^2</math> Model</i> <b>Waseda University, Japan</b>	2019-06

## CONFERENCES AND WORKSHOPS (\*=INVITED)

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<i>Unitarity of single scalar field with non-minimal coupling</i> <b>Oral talk, Gravity 2026, Institute for Basic Science, Daejeon, South Korea</b>	2026-04
<i>*Black holes as a probe of BSM particles</i> <b>Oral talk, CAU BSM Forum, Chung-Ang University, Seoul, South Korea</b>	2026-02
<i>*Unitarity of Higgs inflation and <math>R^2</math> correction</i> <b>Oral talk, 40th Ann. of Implementation of Postdoc System in Shanghai, TDLI</b>	2025-09
<i>Probing dark matter halo profile with primordial black hole mergers</i> <b>Oral talk, Dark Matter and Neutrino Focus Week, TDLI, Shanghai, China</b>	2025-08

<i>Regularized pole inflation and Einstein-Cartan gravity</i>	2025-07
<b>Oral talk, CosPA 2025, Institute for Basic Science, Daejeon, South Korea</b>	
<i>*Inflation in Einstein–Cartan framework</i>	2025-06
<b>Oral talk, 2025 APCTP-IBS Focused Research Program, APCTP, South Korea</b>	
<i>Unitarity in Einstein–Cartan Higgs Inflation with Quantum Correction</i>	2025-06
<b>Oral talk, 7th Int. Workshop HPNP, University of Osaka, Japan</b>	
<i>*Hotspot Formation around Evaporating Primordial Black Holes</i>	2025-04
<b>Oral talk, 7th CUBES Workshop, South Korea</b>	
<i>Probing Dark Matter with Red Giants</i>	2025-02
<b>Oral talk, CAU-IBS BSM Workshop, Chung-Ang University, South Korea</b>	
<i>*Einstein–Cartan gravity as a broad framework for inflation</i>	2024-11
<b>Oral talk, 100+9 GR &amp; Beyond, Jeju National University, South Korea</b>	
<i>Unitarity and Violent Preheating in Einstein–Cartan Higgs Inflation</i>	2024-10
<b>Poster, COSMO, Kyoto University, Japan</b>	
<i>*Probing Dark Matter in Red Giants</i>	2024-09
<b>Oral talk, 4th DMNet symposium, IBS-CTPU, South Korea</b>	
<i>Geometry in scalar field theories with gravity</i>	2023-11
<b>Oral talk, JGRG32, Nagoya University, Japan</b>	
<i>*One-loop effect in Higgs inflation</i>	2023-11
<b>Oral talk, 3rd Int. Joint Workshop on BSM &amp; 11th KIAS Workshop, South Korea</b>	
<i>*One-loop Correction to Higgs Inflation</i>	2023-07
<b>Oral talk, Second Mini-workshop on the Early Universe, Suwa, Japan</b>	
<i>*Thermalization of Hawking Radiation from Primordial Black Holes</i>	2022-11
<b>Oral talk, AAPPS-DACG Workshop 2022, APCTP, South Korea (online)</b>	
<i>Temperature Profile around a Primordial Black Hole</i>	2022-10
<b>Oral talk, JGRG31, RESCEU, University of Tokyo, Japan</b>	
<i>Hot Spot Around Evaporating Primordial Black Holes</i>	2022-09
<b>Oral talk, DESY Theory Workshop 2022, DESY, Germany</b>	
<i>Reheating process in mixed Higgs-<math>R^2</math> model</i>	2022-08
<b>Oral talk, APPC, South Korea (online)</b>	
<i>Reheating Process in Mixed Higgs-<math>R^2</math> Model</i>	2022-07
<b>Oral talk, PASCOS, Max Planck Institute for Nuclear Physics, Germany</b>	
<i>*Reheating after Mixed Higgs-<math>R^2</math> Inflation</i>	2022-03
<b>Oral talk, 6th KEK-PH + 2nd KEK-COSMO, KEK, Japan (online)</b>	
<i>Reheating Process in Mixed Higgs-<math>R^2</math> Model</i>	2021-12
<b>Poster, JGRG30, Waseda University, Japan (online)</b>	
<i>Perturbative Reheating after Mixed Higgs-<math>R^2</math> Inflation</i>	2021-08
<b>Oral talk, RESCEU Summer School, Japan (online)</b>	
<i>Reheating Process in Mixed Higgs-<math>R^2</math> Inflation Model</i>	2021-08
<b>Poster, COSMO, University of Illinois Urbana-Champaign, USA (online)</b>	
<i>Reheating in the Mixed Higgs-<math>R^2</math> Inflation Model</i>	2021-06
<b>Oral talk, PASCOS, IBS-CTPU, South Korea (online)</b>	
<i>Tachyonic preheating in the mixed Higgs-<math>R^2</math> model</i>	2020-11
<b>Oral talk, JGRG, Nagoya University, Japan (online)</b>	
<i>Reheating in the mixed Higgs-<math>R^2</math> model</i>	2020-11
<b>Oral talk, AAPPS-DACG Workshop, APCTP, South Korea (online)</b>	
<i>Tachyonic preheating in the mixed Higgs-<math>R^2</math> model</i>	2020-08
<b>Oral talk, RESCEU Summer School, Japan (online)</b>	
<i>Formation Threshold of Rotating Primordial Black Holes</i>	2019-12
<b>Oral talk, Focus Week on PBHs, IPMU, University of Tokyo, Japan</b>	

<i>Formation Threshold of Rotating Primordial Black Holes</i> <b>Oral talk, JGRG29, Kobe University, Japan</b>	2019-11
<i>Formation Threshold of Rotating Primordial Black Holes</i> <b>Oral talk, APPC, Malaysian Institute of Physics, Kuching, Malaysia</b>	2019-11
<i>Preheating in Mixed Higgs-<math>R^2</math> Model</i> <b>Poster, COSMO, RWTH Aachen University, Germany</b>	2019-09
<i>Rotation and Formation Threshold of Primordial Black Holes</i> <b>Oral talk, RESCEU Summer School, Akita, Japan</b>	2019-08
<i>Preheating in Mixed Higgs-<math>R^2</math> Model</i> <b>Poster, Accelerating Universe in the Dark, YITP, Kyoto University, Japan</b>	2019-03
<i>Reheating in Mixed Higgs-<math>R^2</math> Model</i> <b>Oral talk, CosPA, Center for Gravitation and Cosmology, Yangzhou, China</b>	2018-11
<i>Reheating in Mixed Higgs-<math>R^2</math> Model</i> <b>Oral talk, JGRG28, Rikkyo University, Japan</b>	2018-11
<i>Inflation in the Mixed Higgs-<math>R^2</math> Model</i> <b>Oral talk, COSMO, IBS-CTPU, South Korea</b>	2018-08
<i>Inflation in the Mixed Higgs-<math>R^2</math> Model</i> <b>Oral talk, RESCEU Summer School, Hakodate, Japan</b>	2018-07
<i>Higgs-<math>R^2</math> Inflation</i> <b>Oral talk, CosPA, YITP, Kyoto University, Japan</b>	2017-12
<i>Higgs-<math>R^2</math> Inflation</i> <b>Oral talk, JGRG27, Hiroshima University, Japan</b>	2017-11
<i>Higgs-<math>R^2</math> Inflation</i> <b>Poster, RESCEU Summer School, Yamaguchi, Japan</b>	2017-07 — 08