

SangEun Han

Room #3310, Department of Physics, E6-2, KAIST, 291 Daehak-ro, Yuseong-gu, Daejeon 34141, Republic of Korea

☎ (+82) 42-350-5524 | ✉ sehan@kaist.ac.kr | 🏠 sehan.org | 📧 SangEun Han

Personal information

Citizenship

Republic of Korea (South Korea)

Education

KAIST (Korea Advanced Institute of Science and Technology)

CANDIDATE OF INTEGRATED MASTER'S AND PH.D PROGRAM IN PHYSICS (EXPECTED GRADUATION DATE: AUGUST 2020)

Daejeon, S.Korea

March 2013 - Present

KAIST (Korea Advanced Institute of Science and Technology)

BACHELOR OF SCIENCE, MAGNA CUM LAUDE, FEBURARY, 2013

Double major in Physics and Mathematical Sciences

Daejeon, S.Korea

February 2010 - February 2013

HanKuk University of Foreign Studies

IN DEPARTMENT OF PHYSICS

Seoul, S.Korea

March 2006 - January 2008

Honors

AWARDS

- | | | |
|------|--|----------------|
| 2018 | Outstanding Poster Award , Workshop on Spin-orbit Coupled Topological states | October 2018 |
| 2018 | Pre-doctoral Fellow of Physics at KAIST , Department of Physics, KAIST | August 2018 |
| 2014 | Spring Outstanding Teaching Assistant Awards , Department of Physics, KAIST | September 2014 |
| 2011 | Presidential Design Award , Fall Semester's Freshmen Design Course Award, KAIST | February 2012 |

SCHOLARSHIPS

- | | | |
|-------------|--|-------------------------|
| 2014 - 2015 | Scholarship , Center for Theoretical Physics, Institute for Basic Science | March 2014 - May 2015 |
| 2006 - 2008 | Scholarship , Hankuk University of Foreign Studies | 2006 Fall - 2008 Spring |

Services

Referee

of Phys. Rev. Research.

January 2020 - Present

Referee

of Phys. Rev. Lett.

April 2019 - Present

Referee

of Phys. Rev. B

September 2018 - Present

Sergent

at Military service at Army in Republic of Korea

February 2008 - January 2010

Publication list

“Lattice vibration as a knob for novel quantum criticality: Emergence of supersymmetry from spin-lattice coupling”

SangEun Han, JUNHYUN, AND EUN-GOOK MOON

Submitted to journal (under review). arXiv:1911.01435 [cond-mat.str-el]

“Emergent Anisotropic Non-Fermi Liquid at a Topological Phase Transition in Three Dimensions”

SangEun Han, CHANGHEE LEE, HONGKI MIN, AND EUN-GOOK MOON

Phys. Rev. Lett. **122**, 187601. arXiv:1809.10691 [cond-mat.str-el]

“Quantum Criticality with Infinite Anisotropy in Topological Phase Transitions between Dirac and Weyl Semi-metals”

SangEun Han, GIL YOUNG CHO, AND EUN-GOOK MOON

Phys. Rev. B **98**, 085149. arXiv:1804.01547 [cond-mat.str-el]

“Long-range Coulomb Interaction effects on Topological Phase Transitions between Semi-metals and Insulators”

SangEun Han AND EUN-GOOK MOON

Phys. Rev. B **97**, 241101(R). arXiv:1802.05727 [cond-mat.str-el]

“Topological Phase Transitions in Line-nodal Superconductors”

SangEun Han, GIL YOUNG CHO, AND EUN-GOOK MOON

Phys. Rev. B **95**, 094502. arXiv:1601.00975 [cond-mat.str-el]

“Explaining the Lepton Non-universality at the LHCb and CMS from an Unified Framework”

SANJOY BISWAS, DEBTOSH CHOWDHURY, **SangEun Han**, AND SEUNG J. LEE

JHEP **02**, 142 (2015). arXiv:1409.0882 [hep-ph]

MANUSCRIPTS UNDER PREPARATION

“Stability of $O(N)$ criticality with Lattice Vibrations”

SangEun Han AND EUN-GOOK MOON

Presentation

ORAL PRESENTATION

APS March Meeting 2020 (Virtual APS March Meeting)

Quantum criticalities with lattice vibrations

Denver, USA

Mar. 3, 2020

12th BK21+ Young Physicists Workshop

Emergence of Supersymmetry from spin-lattice coupling

Daejeon, S. Korea

Feb. 4, 2019

KAIST-Weizmann Workshop on Quantum Condensed Matter Physics

Emergence of Supersymmetry from spin-lattice coupling

Rehovot, Israel

Dec. 5, 2019

2019 KPS Fall Meeting

Quantum criticalities with lattice vibrations

Gwangju, S. Korea

Oct. 25, 2019

APS March Meeting 2019

Emergent Anisotropic Non-Fermi Liquid

Boston, USA

Mar. 4, 2019

11th BK21+ Young Physicists Workshop

Emergent Anisotropic Non-Fermi Liquid

Pohang, S. Korea

Feb. 15, 2019

2018 KPS Spring Meeting

Emergent Anisotropic Non-Fermi Liquid

Daejeon, S. Korea

Apr. 26, 2018

APS March Meeting 2018

Long-range Coulomb Interaction effects on Topological Phase Transitions between Semi-metals and Insulators

Los Angeles, USA

Mar. 7, 2018

2017 KPS Spring Meeting

Topological Phase Transitions in Dirac semi-metals of distorted spinels

Daejeon, S. Korea

Apr. 21, 2017

APS March Meeting 2017

Topological Phase Transitions in Dirac semi-metals of distorted spinels

New Orleans, USA

Mar. 14, 2017

POSTER PRESENTATION

2020 Theory Winter School

Emergence of supersymmetry from spin-lattice coupling

Tallahassee, USA

Jan. 6-10, 2020

IBSPCS-KIAS International Workshop Frustrated Magnetism

Stability of Quantum Criticalities

Daejeon, S. Korea

Oct. 14-18, 2019

The 2nd Workshop on Spin-orbit Coupled Topological States

Stability of Quantum Criticalities

Pohang, S. Korea

Sep. 19-21, 2019

KIAS workshop on Topology and Correlation in quantum materials

Emergent Anisotropic Non-Fermi Liquid at a Topological Phase Transition in Three Dimensions

Busan, S. Korea

May 29-31, 2019

The 19th JAPAN-KOREA-TAIWAN SYMPOSIUM ON STRONGLY CORRELATED ELECTRON SYSTEMS

Long-range Coulomb Interaction effects on Topological Phase Transitions between Semi-metals and Insulators /

Emergent Anisotropic Non-Fermi Liquid

Tokyo, Japan

Jan. 11-13, 2019

The 1st Workshop on Spin-Orbit Coupled Topological States Long-range Coulomb Interaction effects on Topological Phase Transitions between Semi-metals and Insulators / Emergent Anisotropic Non-Fermi Liquid • <i>Outstanding Poster Award</i>	Pohang, S. Korea Oct. 1-5, 2018
Advanced School and Workshop on Correlations in Electron Systems – from Quantum Criticality to Topology - Long-range Coulomb Interaction effects on Topological Phase Transitions between Semi-metals and Insulators / Emergent Anisotropic Non-Fermi Liquid	Trieste, Italy Aug. 6-17, 2018
International Workshop on “New Paradigms in Quantum Matter 2018” Long-range Coulomb Interaction effects on Topological Phase Transitions between Semi-metals and Insulators / Emergent Anisotropic Non-Fermi Liquid	Beijing, China Jun. 24-Jul. 7, 2018
KIAS workshop on Topology and Correlation Long-range Coulomb Interaction effects on Topological Phase Transitions between Semi-metals and Insulators	Seoul, S. Korea Jun. 7-8, 2018
10th BK21+ Young Physicists Workshop Long-range Coulomb Interaction effects on Topological Phase Transitions between Semi-metals and Insulators	Seoul, S. Korea Feb. 8-9, 2018
The 19th International Conference on Recent Progress in Many-Body Theories Long-range Coulomb Interaction effects on Topological Phase Transitions between Semi-metals and Insulators	Pohang, S. Korea Jun. 25-30, 2017
2016 Quantum Materials Symposium Topological Phase Transitions in Line-nodal Superconductors	Incheon, S. Korea Feb. 22-26, 2016

Conferences / Scientific Schools

APS March Meeting 2020	Denver, USA Mar. 2-6, 2020
2020 Quantum Materials Symposium	Pyeongchang, S. Korea Feb. 9-14, 2016
12th BK21+ Young Physicists Workshop	Daejeon, S. Korea Feb. 3-4, 2019
2020 Theory Winter School	Tallahassee, USA Jan. 6-10, 2020
KAIST-Weizmann Workshop on Quantum Condensed Matter Physics	Rehovot, Israel Dec. 4-5, 2019
2019 KPS Fall Meeting	Gwangju, S. Korea Oct. 23-25, 2019
IBSPCS-KIAS International Workshop Frustrated Magnetism	Daejeon, S. Korea Oct. 14-18, 2019
The 2nd Workshop on Spin-orbit Coupled Topological States	Pohang, S. Korea Sep. 19-21, 2019
KIAS workshop on Topology and Correlation in quantum materials	Busan, S. Korea May 29-31, 2019
Workshop Quantum Many-Body States 2019	Daejeon, S. Korea May 9-10, 2019
Mini-Workshop Exotic Magnetic Phases in Quantum Many-body Systems	Daejeon, S. Korea April 23, 2019
APS March Meeting 2019	Boston, USA Mar. 4-8, 2019
11th BK21+ Young Physicists Workshop	Pohang, S. Korea Feb. 14-15, 2019

The 19th JAPAN-KOREA-TAIWAN SYMPOSIUM ON STRONGLY CORRELATED ELECTRON SYSTEMS	<i>Tokyo, Japan</i> <i>Jan. 11-13, 2019</i>
The 1st Workshop on Spin-Orbit Coupled Topological States	<i>Pohang, S. Korea</i> <i>Oct. 1-5, 2018</i>
KAIST-UCSB-KAERI joint Workshop on Correlated Electronic Systems	<i>Daejeon, S. Korea</i> <i>Sept. 20-21, 2018</i>
Advanced School and Workshop on Correlations in Electron Systems - from Quantum Criticality to Topology -	<i>Trieste, Italy</i> <i>Aug. 6-17, 2018</i>
International Workshop on “New Paradigms in Quantum Matter 2018”	<i>Beijing, China</i> <i>Jun. 24-Jul. 7, 2018</i>
KIAS-KAIST workshop on Topology and Correlation	<i>Seoul, S. Korea</i> <i>Jun. 7-8, 2018</i>
Workshop Quantum Many-Body States 2018	<i>Daejeon, S. Korea</i> <i>Apr. 27-28, 2018</i>
2018 KPS Spring Meeting	<i>Daejeon, S. Korea</i> <i>Apr. 25-27, 2018</i>
APS March Meeting 2018	<i>Los Angeles, USA</i> <i>Mar. 5-9, 2018</i>
10th BK21+ Young Physicists Workshop	<i>Seoul, S. Korea</i> <i>Feb. 8-9, 2018</i>
APCTP Mini-school on Entanglement and Topological Phases of Matter	<i>Pohang, S. Korea</i> <i>Jan. 29-Feb. 1, 2018</i>
The 19th International Conference on Recent Progress in Many-Body Theories	<i>Pohang, S. Korea</i> <i>Jun. 25-30, 2017</i>
4th One-day KIAS Workshop on Recent Progress in Condensed Matter Physics	<i>Seoul, S. Korea</i> <i>May 25, 2017</i>
2017 KPS Spring Meeting	<i>Daejeon, S. Korea</i> <i>Apr. 19-21, 2017</i>
APS March Meeting 2017	<i>New Orleans, USA</i> <i>Mar. 13-17, 2017</i>
Pyeong-Chang Summer Institute 2016	<i>Pyeongchang, S. Korea</i> <i>Jul. 3-9, 2016</i>
2016 KPS Spring Meeting	<i>Daejeon, S. Korea</i> <i>Apr. 20-22, 2016</i>
2016 Quantum Materials Symposium	<i>Incheon, S. Korea</i> <i>Feb. 22-26, 2016</i>
Focus Workshop Topology in Matter	<i>Daejeon, S. Korea</i> <i>Nov. 25-27, 2015</i>
IBS-MultiDark Joint Focus Program: WIMPs and Axions	<i>Daejeon, S. Korea</i> <i>Oct. 10-21, 2014</i>
The 2nd New Physics @ Korea Institute workshop	<i>Jeju, S. Korea</i> <i>Sept. 14-19, 2014</i>
Pyeong-Chang Summer Institute 2014	<i>Pyeongchang, S. Korea</i> <i>Aug. 24-30, 2014</i>
Cargese International School for Theoretical Particle Physics: MultiTeV Probes of the Standard Model and beyond with the LHC	<i>Cargese, France</i> <i>Jul. 14-26, 2014</i>

2014 KIAS-SNU Physics Winter Camp	<i>Pyeongchang, S. Korea Feb. 10-16, 2014</i>
2014 Open KIAS Winter School on Collider Physics	<i>Pyeongchang, S. Korea Jan. 19-25, 2014</i>
Busan Particle Physics Workshop	<i>Busan, S. Korea Oct. 18-19, 2013</i>
19th International Summer Institute on Phenomenology of Elementary Particles and Cosmology	<i>Gurye, S. Korea Aug. 17-23, 2013</i>
Pyeong-Chang Summer Institute 2013	<i>Pyeongchang, S. Korea Jul. 7-13, 2013</i>
2013 Open KIAS Winter School on Collider Physics	<i>Jeongseon, S. Korea Feb. 17-23, 2013</i>
2013 KIAS-SNU Physics Winter Camp	<i>Pyeongchang, S. Korea Jan. 20-27, 2013</i>
The 12th Summer Institute for Theoretical Physics	<i>Pohang, S. Korea Jul. 22-29, 2012</i>
2012 KIAS-SNU Physics Winter Camp	<i>Pyeongchang, S. Korea Jan. 29-Feb. 5, 2012</i>

Teaching experiences

Teaching Assistants in

• PH504 Graduate Quantum Mechanics 2	<i>March 2013 - December 2017</i>
• PH503 Graduate Quantum Mechanics 1	<i>September 2017 - December 2017</i>
• PH496 Colloquium & PH990 Seminar	<i>March 2017 - June 2017</i>
• PH503 Graduate Quantum Mechanics 1	<i>September 2016 - December 2016</i>
• PH302 Undergraduate Quantum Mechanics 2	<i>March 2016 - June 2016</i>
• PH301 Undergraduate Quantum Mechanics 1	<i>September 2015 - December 2015</i>
• PH654 Quantum Field Theory 2	<i>March 2015 - June 2015</i>
• PH142 General Physics 2	<i>March 2014 - June 2014</i>
• PH141 General Physics 1	<i>September 2013 - December 2013</i>
	<i>March 2013 - June 2013</i>

References

Prof. Eun-Gook Moon

DEPARTMENT OF PHYSICS, KOREA ADVANCED INSTITUTE OF SCIENCE AND TECHNOLOGY (KAIST)
291 Daehak-ro, Yuseong-gu, Daejeon 34141, Republic of Korea
Email: egmoon@kaist.ac.kr

Prof. Hongki Min

DEPARTMENT OF PHYSICS AND ASTRONOMY, SEOUL NATIONAL UNIVERSITY
1 Gwanak-ro, Gwanak-gu, Seoul 08826, Republic of Korea
Email: hmin@snu.ac.kr

Prof. Gil Young Cho

DEPARTMENT OF PHYSICS, POHANG UNIVERSITY OF SCIENCE AND TECHNOLOGY (POSTECH)
77 Cheongam-ro, Nam-gu, Pohang 37673, Republic of Korea
Email: gilyoungcho@postech.ac.kr