YOUNGKUK KIM

CONTACT INFORMATION

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Suwon, Korea

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RESEARCH INTEREST

Topological band theory, topological materials, first-principles calculations, condensed matter theory, low-dimensional materials, energy materials

EDUCATION

Seoul National University, Seoul, Korea
Ph.D. in Condensed Matter Theory
(Adviser: Prof. Jisoon Ihm)
September 2006 - August 2013

Seoul National University, Seoul, Korea
B.S. in Physic and Mathematics (Dual major)
February 1999 - March 2006
(Military service 2003-2005)

ACADEMIC APPOINTMENT

Associate Professor
Department of Physics, SKKU, Korea
March 2021 - present

Assistant Professor
Department of Physics, SKKU, Korea
March 2017 - February 2021

Postdoctoral Researcher
Department of Chemistry,
University of Pennsylvania, USA
August 2013 - February 2017

TEACHING EXPERIENCE

2017: Theory of Electronic Structure Calculations; General Physics I,II;Summer intense Lecture - topological band theory

2018: Undergraduate General Mechanics I and II; Graduate Statistical Mechanics; Writing Research Paper and Research ethics; General Mechanics Exercise; General Physics Experiment; Summer intense Lecture - topological band theory

2019: Graduate Statistical Mechanics ; Writing Research Paper and Research ethics; Physics Colloquium; General Physics2-46 and 51 classes

2020: General Physics I,II; Solid state physics I; Writing Research Paper and Research ethics; General Physics Experiment I; Graduate Statistical Mechanics

2021: Theory of electronic structure calculations; General Physics I; General physics experiment 57 and 58 classes;

DEPARTMENT SERVICE

Curriculum reorganization committee, Brain Korea executive committee; Vietnamese student recruiting committee; SKKU supercomputer building advisory committee; Department-colloquium organizer; Condensed-matter journal-club organizer; Graduate school reprentative committee; Umea-SKKU international student exchange program manager; Undergraduate students advisor (2nd year '18; 4th year '19); Department Development Committee('21)

SELECTED PUBLICATIONS

14. Moon Jip Park*, Sunam Jeon*, SungBin Lee*, Hee Chul Park*, Youngkuk Kim* *"Higher-Order Topological Corner State Tunneling in Twisted Bilayer Graphene"*

    Carbon **174**, 260-265 (2021)

13. Moon Jip Park†, Youngkuk Kim*, Gil Young Cho*, and SungBin Lee*, *"Higher-Order Topological Insulator in Twisted Bilayer Graphene"*

    Physical Review Letters **123**, 216803 (2019) - Editors's suggestion

12. Yun-Tak Oh†, Hong-Guk Min, Youngkuk Kim* *"Dual topological nodal line and nonsymmorphic Dirac Semimetal in Three Dimensions"*

    Physical Review B Rapid Communications **99**, 201110(R) (2019)

11. Hyun-Woo Kim†, Inkyung Son†, Tae-Hoon Kim†, Sung Joon Ahn†, Ha-Chul Shin, Byeong-Seon An, Eun Hye Kim, Ishwor Bahadur Khadka, Sun-Hee Woo*, Youngkuk Kim*, Cheol-Woong Yang*, and Joung Real Ahn* *"Millimeter-Scale Growth of Single-Oriented Graphene on a Palladium Silicide Amorphous Film"*

    ACS Nano, **13**, 1127 (2019)

10. Minwoo Park†, Youngkuk Kim†, and Hoonkyung Lee* *"Design of 2D massless Dirac fermion systems and quantum spin Hall insulators based on spsp2 carbon sheet"*

    npj Computational Materials **4**, 54 (2018)

9. Junyeong Ahn†, Dongwook Kim, Youngkuk Kim, and Bohm-Jung Yang* *"Band topology and linking structure of nodal line semimetals with Z_2 monopole charge"*

    Physical Review Letters **121**, 106403 (2018)

8. Heng Gao†, Youngkuk Kim, Jörn W. F. Venderbos, C. L. Kane, E. J. Mele, Andrew M. Rappe*, and Wei Ren* *"The Dirac-Weyl semimetal: Coexistence of Dirac and Weyl fermions in polar hexagonal ABC crystals"*

    Physical Review Letters **121**, 106404 (2018) – Editor's suggestion

7. Benjamin J. Wieder†, Barry Bradlyn†, Zhijun Wang†, Jennifer Cano†, Youngkuk Kim, Hyeong-Seok D. Kim, Andrew M. Rappe, C. L. Kane*, and B. Andrei Bernevig* *"Wallpaper Fermions and the Nonsymmorphic Dirac Insulator"*

    Science, **361**, 246 (2018)

6. Carl H. Naylor†, William M. Parkin, Jinglei Ping, Zhaoli Gao, Yu Ren Zhou, Youngkuk Kim, Frank Streller, Robert W. Carpick, Andrew M. Rappe, Marija Drndic, James M. Kikkawa, and A. T. Charlie Johnson* *"Monolayer single-crystal 1T-$MoTe_2$ grown by chemical vapor deposition exhibits a weak antilocalization effect"*

    Nano Letters, **16**, 4297 (2016)

5. Benjamin J. Wieder†, Youngkuk Kim, Andrew M. Rappe, and Charles L. Kane*, *"Double Dirac semimetals in Three Dimensions"*

    Physical Review Letters **116**, 186402 (2016) – Editor's suggestion, highlighted in Nature Physics 12, 528 (2016)

4. Dong Liang†, Youngkuk Kim, Dequan Er, Andrew M. Rappe, and Vivek B. Shenoy* *"Two-dimensional π–conjugated covalent–organic frameworks as quantum anomalous Hall topological insulators"*

    Physical Review Letters **116**, 096601 (2016)

3. Shi Liu†, Youngkuk Kim, Liang Z. Tan, and Andrew M. Rappe* *"Strain induced ferroelectric topological insulator"*

    Nano Letters **16**, 1663 (2016)

2. Youngkuk Kim†, Eugene J. Mele, Charles L. Kane, and Andrew M. Rappe* *"Layered topological crystalline insulators"*

    Physical Review Letters **115**, 086802 (2015)

1. Youngkuk Kim†, Benjamin J. Wieder, Charles L. Kane, and Andrew M. Rappe* *"Dirac line node in inversion symmetric crystals"*

    Physical Review Letters **115**, 036806 (2015)