NIMS Award 2021 Winner

Prof. Pablo Jarillo-Herrero

Cecil and Ida Green Professor of Physics,
Massachusetts Institute of Technology

Research Field
Condensed Matter Physics

History

1999	Licenciado en Ciencias Físicas (B.Sc. in Physics), Univ. of Valencia, Spain
2001	M.Sc. in Physics, Univ. of California San Diego, USA
2005	Ph.D. in Physics (Cum Laude), Delft Univ. of Technology, The Netherlands
2005~2006	Postdoc, Kavli Inst. of Nanoscience, Delft U. of Technology, The Netherlands
2006~2007	Nano Research Initiative Fellow, Columbia University, USA
2008~2013	Assistant Prof. of Physics, Massachusetts Institute of Technology, USA
2011~2014	Mitsui Career Development Associate Professor, MIT, USA
2013~2015	Associate Professor (without tenure) of Physics, MIT, USA
2015~2018	Associate Professor (with tenure) of Physics, MIT, USA
2018~present	Cecil and Ida Green Professor of Physics, MIT, USA

Major Awards

2021	Award for Scientific Discovery, US National Academy of Sciences.
2021	Lise Meitner Distinguished Lecture and Medal, Royal Swedish Academy of Sciences.
2020	Medal of the Spanish Royal Physics Society.
2020	Wolf Prize in Physics, Wolf Foundation.
2020	Oliver E. Buckley Condensed Matter Physics Prize Award, American Physical Society.
2020	Moore Foundation Experimental Physics in Quantum Systems Award.
2019	CIFAR Quantum Materials Program Fellow.
2018	Breakthrough of the Year Award winner by Physics World.
2018	American Physical Society Fellow.
2014	Moore Foundation Experimental Physics in Quantum Systems Award.
2013	ONR Young Investigator Award.
2012	Presidential Early Career Award for Scientists and Engineers (PECASE).
2011	DOE Early Career Award, 2011.
2010	IUPAP Young Scientist Prize in Semiconductor Physics.
2009	Packard Fellowship.
2009	Alfred P. Sloan Research Fellowship.
2008	NSF Career Award.

Major Publications/Books

1. J.M. Park+, Y. Cao+, K. Watanabe, T. Taniguchi, and P. Jarillo-Herrero, *"Flavour Hund's Coupling, Correlated Chern Gaps, and Diffusivity in Moiré Flat Bands"*. ***Nature*** **592**, 43 (2021).
2. K. Yasuda, X. Wang, K. Watanabe, T. Taniguchi, and P. Jarillo-Herrero, *"Stacking-Engineered Ferroelectricity in bilayer boron nitride"*. ***Science*** **372**, 1458 (2021).
3. J.M. Park+, Y. Cao+, K. Watanabe, T. Taniguchi, and P. Jarillo-Herrero, *"Tunable Strongly Coupled Superconductivity in Magic Angle Twisted Trilayer Graphene"*. ***Nature*** **590**, 249 (2021).
4. Z. Zheng+, Q. Ma+†, Z. Bi, S. de la Barrera, M-H. Liu, N. Mao, Y. Zhang, N. Kiper, K. Watanabe, T. Taniguchi, J. Kong, W.A. Tisdale, R. Ashoori, N. Gedik, L. Fu, S-Y. Xu, P. Jarillo-Herrero†, *"Unconventional ferroelectricity in moiré heterostructures"*. ***Nature*** **588**, 71 (2020).
5. Y. Cao, D. Rodan-Legrain, O. Rubies-Bigordà, J.M. Park, K. Watanabe, T. Taniguchi, and P. Jarillo-Herrero, *"Tunable correlated states and spin-polarized phases in twisted bilayer–bilayer graphene"*. ***Nature*** **583**, 215 (2020).
6. U. Zondiner+, A. Rozen+, D. Rodan-Legrain+, Y. Cao, R. Queiroz, T. Taniguchi, K. Watanabe, Y. Oreg, F. von Oppen, A. Stern, E. Berg, P. Jarillo-Herrero†, and S. Ilani†, *"Cascade of Phase Transitions and Dirac Revivals in Magic Angle Graphene"*. ***Nature*** **582**, 203 (2020).
7. A. Uri+, S. Grover+, Y. Cao+, J.A. Crosse, K. Bagani, D. Rodan-Legrain, Y. Myasoedov, K. Watanabe, T. Taniguchi, P. Moon, M. Koshino, P. Jarillo-Herrero†, and E. Zeldov†, *"Mapping the twist angle and unconventional Landau levels in magic angle graphene"*. ***Nature*** **581**, 47 (2020).
8. Y. Cao, D. Chowdhury, D. Rodan-Legrain, O. Rubies-Bigordà, K. Watanabe, T. Taniguchi, T. Senthil†, and P. Jarillo-Herrero†, *"Strange metal in magic-angle graphene with near Planckian dissipation"*. ***Phys. Rev. Lett.*** **124**, 076801 (2020).
9. V. Fatemi[+], S. Wu[+], Y. Cao, L. Bretheau, Q. D. Gibson, K. Watanabe, T. Taniguchi, R. J. Cava, and P. Jarillo-Herrero, *"Electrically Tunable Low Density Superconductivity in a Monolayer Topological Insulator"*. ***Science*** **362**, 926 (2018).
10. D.R. Klein, D. MacNeill, J.L. Lado, D. Soriano, E. Navarro-Moratalla, K. Watanabe, T. Taniguchi, S. Manni, P. Canfield, J. Fernández-Rossier, and P. Jarillo-Herrero. *"Probing magnetism in 2D van der Waals crystalline insulators via electron tunneling"*. ***Science*** **360**, 1218 (2018)
11. Y. Cao, V. Fatemi, S. Fang, K. Watanabe, T. Taniguchi, E. Kaxiras, and P. Jarillo-Herrero, *"Unconventional superconductivity in magic-angle graphene superlattices"*. ***Nature*** **556**, 43 (2018)
12. Y. Cao, V. Fatemi, A. Demir, S. Fang, S. L. Tomarken, J. Y. Luo, J. D. Sanchez-Yamagishi, K. Watanabe, T. Taniguchi, E. Kaxiras, R.C. Ashoori, and P. Jarillo-Herrero,

"Correlated Insulator Behaviour at Half-Filling in Magic Angle Graphene Superlattices". ***Nature*** **556**, 80 (2018).

13. S. Wu, V. Fatemi, Q. D. Gibson, K. Watanabe, T. Taniguchi, R. J. Cava, and P. Jarillo-Herrero, *"Observation of the quantum spin Hall effect up to 100 kelvin in a monolayer crystal"*. ***Science*** **359**, 76 (2018).
14. B. Huang^{+}, G. Clark^{+}, E. Navarro-Moratalla^{+}, D. R. Klein, R. Cheng, K. L. Seyler, D. Zhong, E. Schmidgall, M.A. McGuire, D. Cobden, W. Yao, D. Xiao, P. Jarillo-Herrero†, X. Xu†, *"Layer-dependent Ferromagnetism in a van der Waals Crystal down to the Monolayer Limit"*. ***Nature*** **546**, 270 (2017).