

Family name, First name: Efetov, Dmitri K.
Researcher unique identifier(s): [Google Scholar](#)

Citizenship: Germany
Web site: <http://efetovlab.icfo.eu/>

Education

- 2014 **PhD in Physics (also MA and MPhil)**, Department of Physics, **Columbia University, USA**
Supervisor: **Prof. Philip Kim** (PhD conferral date Oct. 15th 2014)
- 2007 **Diploma (MSc) in Physics**, Department of Physics, **ETH Zurich, CH**
Supervisor: **Prof. Philip Kim** (thesis at Columbia University)

Academic Positions

- 2021 – **Full Professor (W3) and Chair of Experimental Solid State Physics, LMU Munich, GER**
My group engineers exotic quantum effects in the emerging class of 2D materials, and explores transport and optical properties of correlated, superconducting, magnetic and topological systems at low temperatures (10mK), high magnetic fields (35T) and on fast time-scales (ps).
- 2017 – 2022 **Assistant Professor/Group Leader, ICFO Barcelona, SP**
First group in Europe (third worldwide) to observe superconductivity in magic angle graphene.
- 2014 – 2017 **Postdoctoral Researcher**, Group of Prof. Dirk Englund, **MIT, USA**
First realization of a GHz single photon detector based on a graphene Josephson junction.
- 2007 – 2014 **Graduate Researcher**, Group of Prof. Philip Kim, **Columbia University, USA**
Thesis: “Towards inducing superconductivity into graphene.”

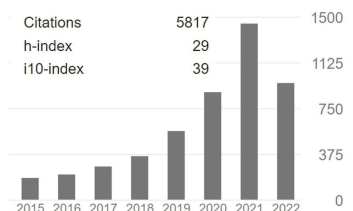
Awards and Honors

- 2022 **IUPAP Early Career Scientist Prize in Semiconductor Physics**
“For the observation of novel insulating, superconducting and topological many-body ground states in magic angle twisted bilayer graphene”.
- 2020 **Finalist of the LaVanguardia Science Prize, SP**
For discovery of plethora of novel electronic states in magic angle graphene.
- 2020 – 2025 **ERC Starting Grant “SuperTwist”** (1.780.000€), **European Research Council, EU**
- 2018 – 2021 **Junior Leader Fellowship** (305.700€ for 3 years), **Obra Social “laCaixa”, SP**
- 2012 **Charles H. Townes Fellow Award** (3000\$ price), **Columbia University, NY, USA**
Awarded annually to one outstanding PhD student in condensed matter and atomic physics.
- 2007 – 2012 **Faculty PhD Fellowship**, (~70.000\$/year, including tuition), **Columbia University, USA**

Publications and Presentations Summary

>55 publications, 3 patents, >5900 citations, h-index >29 in Nature (3x), Science (2x), Nature Phys. (8x), Nature Nano. (3x), PRL (5x) etc. and were covered by the New York Times, Le Monde, Physics Today, Physik Journal etc.

>130 invited seminars/colloquia including MIT, Harvard, Princeton, Yale, Stanford, Caltech, ETH, Cambridge, Weizmann, Gordon Conference, Aspen, MRS, KITP, APS, CLEO, SPIE.



Leadership Capability

- 2022 – Head, Quantum Technology Park cleanroom of Munich Quantum Valley, **LMU Munich, GER**
2018 – 2022 **Coordinator of the collaborative EU Quantum Flagship project “2D-SIPC”**.
2018 – 2022 **Member of the Science and Engineering Board (SEB) of the EU Quantum Flagship**.

Institutional Responsibilities

- 2017 – PhD examiner; nano-fab. laboratory committee member; faculty member, **ICFO, SP**
2009 – 2013 Nanoscale engineering facilities committee member, **Columbia University, USA**
2000 – 2001 Military Service at “Lebenshilfe Bochum eV” - attendant in a home for the mentally disabled.

Organisation of Scientific Meetings

- 2022 Organizer/session chair at the Materials Research Society (MRS) meeting, **Honolulu, USA**
2020 Organizer/session chair at the European Physical Society (EPS) meeting, **Madrid, SP**
2020 Organizer of ICFO&MIT school on "Moiré materials" (>1200 participants), **ICFO, SP**
2018 – 2022 Organizer of the 2D-SIPC Quantum Flagship project meetings (3x), **ICFO, SP**
2017 – Conference session chair – APS March meeting, CLEO Europe, Graphene 2022 etc.
2010 Organizer of the Gotham-Metro meetings, **New York Academy of Sciences, USA**

Supervision of Postdocs and Students

- 2021 – My chair at LMU has currently: **3 Senior Researchers, 3 Postdocs, 6 PhDs**
2007 – 2017 Supervised **>15 BSc and MSc students** in the groups of Prof. Kim and Prof. Englund.

Teaching Activities

- 2015 **Substitute Lecturer, MIT, USA**
• 6.602 Fundamentals of Photonics (1 semester)
2007 – 2012 **Teaching Assistant/Instructor/Lecturer, Columbia University, USA**
• G4051 Advanced Laboratory Work (2 semesters)
• W1291 General Physics Lab I/II (4 semesters)
• C1493 Experimental Physics Lab (4 semesters)
2005 – 2006 **Teaching Assistant, ETH Zurich, CH**
• General Physics Lab I/II (2 semesters)

Referee

Nature, Science, PNAS, Nature Phys., Nature Phot., Nature Nano., PRL, Nano Lett., etc.

Major Collaborations

- Prof. L. Levitov, theory of scattering mechanisms in twistrionic materials, **MIT, USA**
- Prof. A. MacDonald, theory of superconductivity in graphene, **UT Austin, USA**
- Prof. A. B. Bernevig, theory of topology in twistrionic materials, **Princeton, USA**
- Prof. A. Vishvanath, theory of correlated states in twistrionic materials, **Harvard, USA**
- Prof. E. Zeldov, scanning probe of graphene, **Weizmann, IL**
- Prof. K. T. Law, theory of Josephson junctions, **HKUST, CN**
- Prof. A. Principi, theory of cooling dynamics in magic graphene, **U Manchester, UK**
- Prof. S. Ganichev, THz spectroscopy of moiré materials, **Regensburg, GER**
- Dr. K. C. Fong, microwave and quantum circuits, **BBN Raytheon and Harvard, USA**
- Dr. B. Piot, high magnetic field transport of hetero-structures, **Grenoble, FR**

Full Publication List: (10 key publications marked red)

56. Realizing attosecond core-level X-ray spectroscopy for the investigation of condensed matter and for material science

A. M. Summers, S. Severino, M. Reduzzi, T. P. H. Sidiropoulos, D. Rivas, N. Di Palo, H.-W. Sun, Y.-H. Chien, I. León, B. Buades, S. Cousin, S.M. Teichmann, T. Mey, K. Mann, B. Keitel, E. Plönjes-Palm, D. K. Efetov, H. Schwörer, J. Biegert

arXiv:2204.07244 (2022).

55. Two-dimensional cuprate nanodetector with single photon sensitivity at $T = 20$ K

R. Luque Merino, P. Seifert, J. Duran Retamal, R. Mech, T. Taniguchi, K. Watanabe, K. Kadowaki, R. H. Hadfield, D. K. Efetov

arXiv:2208.05044 (2022).

54. Dirac cone spectroscopy and strongly correlated phases in twisted trilayer graphene

C. Shen, P. J. Ledwith, K. Watanabe, T. Taniguchi, E. Khalaf, A. Vishwanath and D. K. Efetov

arXiv:2204.07244 (2022).

53. Valley-polarized state induced ϕ_0 -Josephson junction in twisted bilayer graphene

Y.-M. Xie, D. K. Efetov and K. T. Law

arXiv:2202.05663 (2022).

52. Magnetic Josephson junctions and superconducting diodes in magic angle twisted bilayer graphene

J. Díez-Mérida, A. Díez-Carlón, S. Y. Yang, Y.-M. Xie, X.-J. Gao, K. Watanabe, T. Taniguchi, X. Lu, K. T. Law and D. K. Efetov

arXiv:2110.01067 (2022).

51. Materials and devices for fundamental quantum science and quantum technologies

M. Polini, F. Giazotto, K. C. Fong, I. M. Pop, C. Schuck, T. Boccali, G. Signorelli, M. D'Elia, R. H. Hadfield, V. Giovannetti, D. Rossini, A. Tredicucci, D. K. Efetov, F. H. L. Koppens, P. Jarillo-Herrero, A. Grassellino, D. Pisignano

arXiv:2201.09260v1 (2022).

50. Revealing the thermal properties of superconducting magic-angle twisted bilayer graphene

G. Di Battista, P. Seifert, K. Watanabe, T. Taniguchi, K.C. Fong, A. Principi and D. K. Efetov

Nano Letters, (2022).

49. Reentrant correlated insulators in twisted bilayer graphene at 25T (2π flux)

J. Herzog-Arbeitman, A. Chew, D. K. Efetov and B. A. Bernevig

Physical Review Letters, 129, 076401 (2022).

48. Chern mosaic and Berry-curvature magnetism in magic angle graphene

S. Grover, M. Bocarsly, A. Uri, P. Stepanov, G. Di Battista, I. Roy, J. Xiao, A. Y. Meltzer, Y. Myasoedov, K. Pareek, K. Watanabe, T. Taniguchi, B. Yan, A. Stern, E. Berg, D. K. Efetov and E. Zeldov

Nature Physics, 18, 885 (2022).

47. Observation of re-entrant correlated insulators and interaction driven Fermi surface reconstructions at one magnetic flux quantum per moiré unit cell in magic-angle twisted bilayer graphene

I. Das, C. Shen, A. Jaoui, J. Herzog-Arbeitman, A. Chew, C.-W. Cho, T. Taniguchi, K. Watanabe, B. Piot, B. A. Bernevig and D. K. Efetov

Physical Review Letters, 128, 217701 (2022).

46. Quantum-critical behavior in magic-angle twisted bilayer graphene

A. Jaoui, I. Das, G. Di Battista, J. Díez-Mérida, X. Lu, K. Watanabe, T. Taniguchi, H. Ishizuka, L. Levitov and D. K. Efetov

Nature Physics, 18, 633 (2022).

News: Nature Physics News & Views; Journal Club of Condensed Matter Physics;

45. Nonlinear intensity dependence of photogalvanics and photoconductance induced by terahertz laser radiation in twisted bilayer graphene close to magic angle
S. Hubmann, P. Soul, G. Di Battista, M. Hild, K. Watanabe, T. Taniguchi, **D. K. Efetov** and S. D. Ganichev
Physical Review Materials, **6**, 024003 (2022).
44. Competing zero-field Chern insulators in superconducting twisted bilayer graphene
P. Stepanov, M. Xie, K. Watanabe, T. Taniguchi, X. Lu, A. H. MacDonald, B. A. Bernevig and **D. K. Efetov**
Physical Review Letters, **127**, 197701 (2021).
43. Observation of interband collective excitations in twisted bilayer graphene
N. C. H. Hesp, I. Torre, D. Rodan-Legrain, P. Novelli, Y. Cao, S. Carr, S. Fang, P. Stepanov, D. Barcons-Ruiz, H. Herzig-Sheinfux, K. Watanabe, T. Taniguchi, **D. K. Efetov**, E. Kaxiras, P. Jarillo-Herrero, M. Polini and F. H. L. Koppens
Nature Physics, **17**, 1162–1168 (2021).
42. Multiple flat bands and topological Hofstadter butterfly in twisted bilayer graphene close to the second magic angle
X. Lu*, B. Lian*, G. Chaudhary*, G. Romagnoli, B. A. Piot, K. Watanabe, T. Taniguchi, M. Poggio, A. H. MacDonald, B. A. Bernevig and **D. K. Efetov**
PNAS, **118**, 30 (2021).
41. Ultra-sensitive calorimetric measurements of the electronic heat capacity of graphene
M. A. Aamir*, J. N. Moore*, X. Lu, P. Seifert, D. Englund, K. C. Fong and **D. K. Efetov**
Nano Letters, **21**, 12, 5330 (2021).
40. A high-T_c van der Waals superconductor based photodetector with ultra-high responsivity and nanosecond relaxation time
P. Seifert*, J. R. Durán Retamal*, R. Luque, H. Herzig Sheinfux, J. N. Moore, M. A. Aamir, T. Taniguchi, K. Watanabe, K. Kadowaki, M. Artiglia, M. Romagnoli and **D. K. Efetov**
2D Materials, **8** 035053 (2021).
39. Twisted bilayer graphene. IV. Exact insulator ground states and phase diagram
B. Lian, Z.-D. Song, N. Regnault, **D. K. Efetov**, A. Yazdani and B. A. Bernevig
Physical Review B, **103**, 205414 (2021).
38. Josephson junction infrared single-photon detector
E. D. Walsh, W. Jung, G.-H. Lee, **D. K. Efetov**, B.-I. Wu, K.-F. Huang, T. A. Ohki, T. Taniguchi, K. Watanabe, P. Kim, D. Englund and K. C. Fong
Science, **372**, 6540 (2021).
[News: PhysOrg;](#)
37. Symmetry broken Chern insulators and Rashba-like Landau level crossings in magic angle bilayer graphene
I. Das*, X. Lu*, J. Herzog-Arbeitman, Z.-D. Song, K. Watanabe, T. Taniguchi, B. A. Bernevig and **D. K. Efetov**
Nature Physics, **17**, 710 (2021).
[News: PhysOrg;](#)
36. The marvels of moiré materials
E. Y. Andrei, **D. K. Efetov**, P. Jarillo-Herrero, A. H. MacDonald, K. F. Mak, T. Senthil, E. Tutuc, A. Yazdani and A. F. Young
Nature Reviews Materials, **6**, 201 (2021) – (Invited Viewpoint Article).
[Editorial: Moiré magic three years on – Nature Reviews Materials](#), **6**, 191 (2021);
35. Effektvolle Drehung
D. K. Efetov
Physik Journal, **03**, 28 (2021) - (Invited Overview – main journal German Research Foundation).
[Cover: Physik Journal;](#)

- 34.** Measuring local moiré lattice heterogeneity of twisted bilayer graphene
T. Benschop*, T. de Jong*, P. Stepanov*, X. Lu, V. Stalman, S. J. van der Molen, **D. K. Efetov** and M. Allan
Physical Review Research, **3**, 013153 (2021).
- 33.** Giant enhancement of third-harmonic generation in graphene-metal heterostructures
L. Rozema, D. Alcaraz Iranzo, A. Trenti, J. Cox, A. Kumar, H. Bieliaiev, S. Nanot, C. Peng, **D. K. Efetov**, J. Y. Hong, J. Kong, D. Englund, F. J. García de Abajo, F. H. L. Koppens and P. Walther
Nature Nanotechnology, **16**, 318 (2021).
[News: EurekaAlert; ProPhysik;](#)
- 32.** Observation of flat bands in twisted bilayer graphene
S. Lisi, X. Lu, T. Benschop, T. de Jong, P. Stepanov, F. Margot, I. Cucchi, E. Cappelli, A. Hunter, A. Tamai, V. Kandyba, A. Giampietri, A. Barinov, J. Jobst, V. Stalman, M. Leeuwenhoek, K. Watanabe, T. Taniguchi, L. Rademaker, S. J. van der Molen, M. Allan, **D. K. Efetov** and F. Baumberger
Nature Physics, **17**, 189 (2021).
[News: PhysOrg;](#)
- 31.** Nuevos estados en el grafeno “mágico”
D. K. Efetov
Investigación y Ciencia (Scientific American Spain) (2020) – (Invited Panorama Article).
- 30.** Graphene-based Josephson junction microwave bolometer
G.-H. Lee, **D. K. Efetov**, L. Ranzani, E. Walsh, J. Crossno, T. A. Ohki, T. Taniguchi, K. Watanabe, Kim, D. Englund and K. C. Fong
Nature **586**, 42–46 (2020).
[News: PhysOrg; NanoWerk;](#)
- 29.** Terahertz photogalvanics in twisted bilayer graphene close to the second magic angle
M. Otteneder*, S. Hubmann*, X. Lu, D. A. Kozlov, L. E. Golub, **D. K. Efetov** and S. D. Ganichev
Nano Letters, **20**, 10 (2020).
- 28.** Untying the insulating and superconducting orders in magic-angle graphene
P. Stepanov, I. Das, X. Lu, A. Fahimniya, K. Watanabe, T. Taniguchi, F. H. L. Koppens, J. Lischner, L. Levitov and **D. K. Efetov**
Nature, **583**, 375–378 (2020).
[News: Nature: News and Views;](#)
- 27.** High-order minibands and interband Landau level reconstruction in graphene moiré superlattice
X. Lu, J. Tang, J. R. Wallbank, S. Wang, C. Shen, S. Wu, P. Chen, W. Yang, J. Zhang, K. Watanabe, T. Taniguchi, R. Yang, D. Shi, **D. K. Efetov**, V. I. Fal’ko and G. Zhang
Physical Review B, **102**, 045409 (2020).
- 26.** Superconductivity and strong correlations in moiré flat bands
L. Balents, C. Dean, **D. K. Efetov** and A. F. Young
Nature Physics, **16**, 725 (2020) - (Focus/Perspective – Invited Review Article).
[Journal Club for Condensed Matter Physics: by Senthil Todadri;](#)
- 25.** Magic-angle bilayer graphene nanocalorimeters: toward broadband, energy-resolving single photon detection
P. Seifert, X. Lu, P. Stepanov, J. R. Duran, K. C. Fong, A. Principi and **D. K. Efetov**
Nano Letters, **5**, 20 (2020).
- 24.** Critical role of device geometry for the phase diagram of twisted bilayer graphene
Z. A. H. Goodwin, V. Vitale, F. Corsetti, **D. K. Efetov**, A. A. Mosto and J. Lischner
Physical Review B, **101**, 165110 (2020).

23. Nanoscale imaging and control of hBN defect single photon emitters by a resonant nano-antenna
N. Palombo Blascetta, M. Liebel, X. Lu, T. Taniguchi, K. Watanabe, **D. K. Efetov** and N. F. van Hulst
Nano Letters, **3**, 20 (2020).
22. Superconductors, orbital magnets, and correlated states in magic angle bilayer graphene
X. Lu, P. Stepanov, W. Yang, M. Xie, A. M. Ali, I. Das, C. Urgell, K. Watanabe, T. Taniguchi, G. Zhang, A. Bachtold, A. MacDonald and **D. K. Efetov**
Nature, **574**, 653 (2019).
News: The New York Times; Le Monde; La Vanguardia; Physics Today; TV3; Spektrum etc.
Journal Club for Condensed Matter Physics: by Mike Zaletel;
21. Thermal radiation control from hot graphene electrons coupled to a photonic crystal nanocavity
R.-J. Shiue, Y. Gao, C. Tan, C. Peng, J. Zheng, **D. K. Efetov**, Y. D. Kim, J. Hone and D. Englund
Nature Communications, **10**, 109 (2019).
20. Compact mid-infrared graphene thermopile enabled by a nanopatterning technique of electrolyte gates
C. Peng, S. Nanot, R.J. Shiue, G. Grosso, Y. Yang, M. Hempel, P. Jarillo-Herrero, J. Kong, F. H. L. Koppens, **D.K. Efetov** and D. Englund
New Journal of Physics, **20**, 083050 (2018).
19. Fast thermal relaxation in cavity-coupled graphene bolometers with a Johnson noise read-out
D. K. Efetov, R.-J. Shiue, Y. Gao, B. Skinner, E. Walsh, C. Choi, J. Zheng, C. Tan, G. Grosso, C. Peng, J. Hone, K. C. Fong and D. Englund
Nature Nanotechnology, **13**, 797–801 (2018).
News: MIT News;
18. Probing the ultimate confinement limits of screened graphene plasmons by far-field excitation
D. Alcaraz Iranzo, S. Nanot, E. Dias, I. Epstein, C. Peng, **D. K. Efetov**, M. B. Lundeberg, R. Parret, J. Osmond, J.-Y.Hong, J. Kong, D. Englund, N. M. R. Peres and F. H.L. Koppens
Science, **360**, 291–295 (2018).
News: Nature Nanotechnology: News and Views;
17. Ultrafast graphene light emitter
Y. D. Kim, Y. Gao, R.-J. Shiue, L. Wang, O. B. Aslan, M.- H. Bae, H. Kim, D. Seo, H.- J. Choi, S. H. Kim, A. Nemilentsau, T. Low, C. Tan, **D. K. Efetov**, T. Taniguchi, K. Watanabe, K. L. Shepard, T. F. Heinz, D. Englund and J. Hone
Nano Letters, **18**, 934–940 (2018).
16. Controlled electrochemical intercalation of graphene/hBN van der Waals heterostructures
S. Y. F. Zhao, G. A. Elbaz, D. K. Bediako, C. Yu, **D. K. Efetov**, Y. Guo, J. Ravichandran, K.-A. Min, S. Hong, T. Taniguchi, K. Watanabe, L.E. Brus, X. Roy and P. Kim
Nano Letters, **18**, 460–466 (2018).
15. A MoTe₂ based light emitting diode and photodetector for silicon photonic integrated circuits
Y. Bie, G. Grosso, M. Heuck, M. M. Furchi, Y. Cao, J. Zheng, E. Navarro-Moratalla, L. Zhou, **D. K. Efetov**, T. Taniguchi, K. Watanabe, J. Kong, D. Englund and P. Jarillo-Herrero
Nature Nanotechnology, **12**, 1124–1129 (2017).
News: Nature Nanotechnology: News and Views; MIT News;
14. Graphene-based Josephson junction single photon detector
E. D. Walsh, **D. K. Efetov**, G.-H. Lee, M. Heuck, J. Crossno, T. A. Ohki, P. Kim, D. Englund and K. C. Fong
Physical Review Applied, **8**, 024022 (2017) - (Editor's suggestion).
News: APS Physics Synopsis;

13. Inducing superconducting correlation in quantum Hall edge states
G.H. Lee, K. F. Huang, **D. K. Efetov**, D. S. Wei, S. Hart, T. Taniguchi, K. Watanabe, A. Yacoby and P. Kim
Nature Physics, **13**, 693–698 (2017).
[News: Nature Physics: News and Views;](#)
12. Tunable and high purity room-temperature single photon emission from atomic defects in hexagonal boron nitride
G. Grosso, H. Moon, B. Lienhard, S. Ali, **D. K. Efetov**, M. M. Furchi, P. Jarillo-Herrero, M. J. Ford, I. Aharonovich, and D. Englund
Nature Communications, **8**, 705 (2017).
11. Active 2D materials for on-chip nanophotonics and quantum optics
R.-J. Shiue, **D. K. Efetov**, G. Grosso, C. Peng, K. C. Fong and D. Englund
Nanophotonics, **2016-0172** (2017) - (Invited Review Article).
10. Ambipolar transport and magneto-resistance crossover in a Mott insulator, Sr_2IrO_4
J. Ravichandran, C. R. Serrao, **D. K. Efetov**, D. Yi, Y. S. Oh, S.-W. Cheong, R. Ramesh and P. Kim
Journal of Physics: Condensed Matter, **28**, 505304 (2016).
9. Crossover from retro to specular Andreev reflections in bilayer graphene
D. K. Efetov and K. B. Efetov
Physical Review B, **94** (7), 075403 (2016).
8. Li intercalation into graphite: direct optical imaging and Cahn-Hilliard reaction dynamics
Y. Guo, R. B. Smith, Z. Yu, **D. K. Efetov**, J. Wang, P. Kim, M. Z. Bazant and L. E. Brus
The Journal of Physical Chemistry Letters, **7** (11), 2151–2156 (2016).
7. Specular interband Andreev reflections at van der Waals interfaces between graphene and NbSe_2
D. K. Efetov, L. Wang, C. Handschin, K. B. Efetov, J. Shuang, R. Cava, T. Taniguchi, K. Watanabe, J. Hone, C. R. Dean and P. Kim
Nature Physics, **12**, 328–332 (2016).
6. High-responsivity graphene–boron nitride photodetector and autocorrelator in a silicon photonic integrated circuit
R. J. Shiue, Y. Gao, Y. Wang, C. Peng, A. D. Robertson, **D. K. Efetov**, S. Assefa, F. H. L. Koppens, J. Hone and D. Englund
Nano letters, **15** (11), 7288–7293 (2015).
5. Multiband transport in bilayer graphene at high carrier densities
D. K. Efetov, P. Maher, S. Glinskis and P. Kim
Physical Review B, **84** (16), 161412 (2011) - (Editor’s suggestion).
4. Nanocrystalline graphite growth on sapphire by carbon molecular beam epitaxy
S. K. Jerng, D. S. Yu, Y. S. Kim, J. Ryou, S. Suklyun, C. Kim, S. Yoon, **D. K. Efetov**, P. Kim and S.H. Chun
The Journal of Physical Chemistry C, **115** (11), 4491–4494 (2011).
3. Controlling electron-phonon interactions in graphene at ultrahigh carrier densities
D. K. Efetov and P. Kim
Physical Review Letters, **105** (25), 256805 (2010) - (Editor’s suggestion).
[News: APS Physics Viewpoint;](#)
2. Electronic transport in locally gated graphene nanoconstrictions
B. Özyilmaz, P. Jarillo-Herrero, **D. K. Efetov** and P. Kim
Applied Physics Letters, **91** (19), 192107 (2007).
1. Electronic transport and quantum hall effect in bipolar graphene p-n-p junctions
B. Özyilmaz, P. Jarillo-Herrero, **D. K. Efetov**, D. Abanin, L. S. Levitov and P. Kim
Physical Review Letters, **99** (16), 166804 (2007) - (Editor’s suggestion).

Patents

3. A superconducting transition-edge thermal sensor

P. Seifert, J. Duran, X. Lu, P. Stepanov and **D. K. Efetov**
European patent application, 19382979.3-1212 (2020).

2. A superconducting nanowire single-photon detector, and a method for obtaining such detector

J. Duran, P. Seifert, X. Lu, A. Ali and **D. K. Efetov**
European patent application, 19382806.8-1020 (2019).

1. Locally gated graphene nanostructures and methods of making and using

B. Özyilmaz, **D. K. Efetov**, P. Jarillo-Herrero and P. Kim
US Patent, 8,659,009 (2014).

Full List of Invited Talks (* postponed due to COVID-19 pandemic)

139. 1/23 - Physics Colloquium, **Aspen Physics Center, USA**

138. 1/23 - Physics Colloquium, **Nanyang Technical University, SIN**

2022

137. 12/22 - Physics Colloquium, **University Duisburg-Essen, GER**

136. 11/22 - Materials Research Society meeting, **Boston, USA**

135. 10/22 - "Frontiers of Condensed Matter" school, **Les Houches, FR**

134. 9/22 - "Nano meets Quantum" CeNS workshop, **Venice, IT**

133. 8/22 - ICTP 2022 "Strongly Correlated Matter: from Quantum Criticality to Flat Bands", **Trieste, IT**

132. 8/22 - Materials with novel electronic properties (MANEP) workshop, **Les Diablerets, CH**

131. 8/22 - Low Temperature Physics 29 conference, **Sapporo, JP**

130. 8/22 - Princeton Condensed Matter Summer school, **Princeton University, USA**

129. 7/22 - "Novel electronic properties of 2D materials" conference, **San Sebastian, SP**

128. 7/22 - Graphene 2022 conference, **Aachen, GER**

127. 7/22 - Munich Quantum conference MCQST2022, **Sonthofen, GER**

126. 6/22 - ICPS 2022 conference (online), **Sydney, AU**

125. 6/22 - Gordon Research Conference – Correlated materials, **Massachusetts, USA**

124. 6/22 - Condensed Matter seminar, **Boston College, USA**

123. 6/22 - Quantum seminar, **BBN Raytheon, USA**

122. 6/22 - Gordon Research Conference - Beyond graphene, **New Hampshire, USA**

121. 6/22 - CeNS colloquium, **LMU Munich, GER**

120. 5/22 - Physics seminar (online), **IIP Natal, BRA**

119. 5/22 - Virtual Science Forum seminar (online), **TU Delft, NL**

118. 5/22 - QT Flagship Cluster meeting (online), **Paris, FR**

117. 5/22 - Moiré summer school, **Capri, IT**

116. 5/22 - Entangled States of Matter conference, **Berlin, GER**

115. 4/22 - 2DTech seminar (online), **Chalmers University, SE**

114. 4/22 - Landau Institute colloquium (online), **Landau Institute, RU**

113. 3/22 - Princeton Physics colloquium, **Princeton University, USA**

112. 3/22 - New era of two-dimensional quantum matter Workshop, **Princeton University, USA**

2021

111. 12/21 - ICAMD 2021 conference (online), **Jeju, KR**

110. 11/21 - EQTC 2021 conference (online), **Dublin, IR**

109. 10/21 - Condensed matter seminar (online), **HKUST, CN**

108. 9/21 - Condensed matter seminar, **ETH Zurich, CH**

107. 7/21 - DFG Priority program 2244 kick-off lecture (online), **TU Dresden, GER**

106. 6/21 - Nanolithography summer school (online), **University of Salamanca, SP**

105. 6/21 - NT21 conference (online), **Rice University, USA**

- 104. 6/21 - Emergent topological superconductivity workshop (online), **Aalto University, FI**
- 103. 6/21 - Vortex Matter workshop (online), **IIT Kanpur, IN**
- 102. 6/21 - Quantum materials seminar (online), **Flatiron Institute NY, USA**
- 101. 5/21 - Physics colloquium (online), **IISc Bangalore, IN**
- 100. 5/21 - Workshop Cavity QED in materials (online), **MPI Hamburg, GER**
- 99. 3/21 - Workshop Strong correlations in 2D materials (online), **Hebrew University, IL**
- 98. 3/21 - APS March meeting (online), **USA**
- 97. 3/21 - Condensed matter Seminar (online), **Amherst University, USA**
- 96. 3/21 - Condensed matter Seminar (online), **Ohio State University, USA**
- 95. 2/21 - Graphene for US (online), **New York, USA**
- 94. 2/21 - Correlated Synthetic Quantum Materials Symposium (online), **Bremen, GER**
- 93. 2/21 - APCTP-KIAS Quantum Materials Symposium (online), **Seoul, KR**
- 92. 2/21 - Physics Colloquium (online), **University of Washington, USA**
- 91. 1/21 - Seminar LMPQ Université de Paris (online), **Paris, FR**

2020

- 90. 12/20 - KITP Correlated Systems Workshop (online), **UCSB, USA**
- 89. 11/20 - Russian condensed matter Colloquium (online), **Moscow, RU**
- 88. 11/20 - Coherent order and transport in spin-active systems SPICE workshop (online), **Mainz, GER**
- 87. 11/20 - Saclay Physics Colloquium (online), **Paris, FR**
- 86. 10/20 - Condensed matter Seminar (online), **Princeton, USA**
- 85. 10/20 - Condensed matter Seminar (online), **Harvard, USA**
- 84. 11/20 - Topological Superconductivity SPICE workshop (online), **Mainz, GER**
- 83. 10/20 - Chez Pierre Seminar (online), **MIT, USA**
- 82. 10/20 - Physics Seminar (online), **Harvard, USA**
- 81*. 9/20 - 70-th birthday of K. B. Efetov Workshop, **Bochum University, GER**
- 80*. 9/20 - Nanoscale Phenomena Conference, **Samarkand, UZ**
- 79. 8/20 - PSI Summer Camp (online), **Zuos, CH**
- 78*. 8/20 - MaNEP SWM-2020 Workshop, **Les Diablerets, CH**
- 77. 8/20 - 90-th birthday of G.M.Eliashberg Conference (held online 8/21), **Moscow, RU**
- 76. 7/20 - Graphene 2020 Conference (online), **Phantoms, SP**
- 75. 6/20 - ISTA Physics Seminar, **IST Austria, AT**
- 74. 6/20 - Munich Physics Colloquium (online), **LMU Munich, GER**
- 73*. 6/20 - Electronic Correlations and Topology School, **Natal, BR**
- 72*. 5/20 - Correlated Quantum Matter Workshop, **Belgrade, SRB**
- 71*. 5/20 - Entangled States of Matter Workshop, **Berlin, GER**
- 70*. 5/20 - Correlations Conference, **ICTP Trieste, IT**
- 69*. 5/20 - Twistronics Workshop, **MPI Hamburg, GER**
- 68. 5/20 - Condensed Matter Seminar (online), **NTU Singapore, SG**
- 67. 4/20 - IMDEA Seminar (online), **Madrid, SP**
- 66*. 3/20 - Heraeus-Seminar DFG, **Bad Honnef, GER**
- 65*. 3/20 - QSIT Colloquium, **ETH Zurich, CH**
- 64*. 3/20 - Physics Seminar, **Paul-Scherrer Institute, CH**
- 63. 3/20 - IWEPNM, **Kirchberg, AU**
- 62*. 3/20 - APS March Meeting, **Denver, USA**
- 61. 2/20 - Physics Seminar, **ICMM Madrid, SP**
- 60. 2/20 - Condensed Matter Physics Seminar, **Oxford, UK**
- 59. 2/20 - Israel Physics Society Plenary Talk, **Weizmann, IL**
- 58. 2/20 - Physics Seminar, **IST Austria, AT**

2019

- 57. 12/19 - Physics Department Colloquium, **Weizmann, IL**
- 56. 12/19 - Physics Department Colloquium, **University of Geneva, CH**
- 55. 11/19 - ICFO Colloquium, **Barcelona, SP**
- 54. 11/19 - IQFA conference, **Paris, FR**

53. 10/19 - Condensed Matter Seminar, **Rutgers, USA**
52. 10/19 - Metro-Gotham Meeting, **New York Academy of Sciences, USA**
51. 10/19 - Emergent Topology Conference, **Princeton, USA**
50. 9/19 - Summer School Nicols Cabrera, **Madrid, SP**
49. 9/19 - Hocino Conference, **Barcelona, SP**
48. 9/19 - BEC2019, **Sant Feliux, SP**
47. 8/19 - Emergent Phenomena in Correlated Quantum Matter, **Cargese, FR**
46. 7/19 - Theoretical and Experimental Magnetism, **Abington, UK**
45. 7/19 - Physics in the City, **London, UK**
44. 7/19 - BIST Workshop, **Barcelona, SP**
43. 7/19 - Aspen Physics Workshop, **Aspen, USA**
42. 6/19 - Graphene 2019, **Rome, IT**
41. 6/19 - CLEO Europe, **Munich, GER**
40. 6/19 - Gordon Research Conference, **Hong Kong, CN**
39. 6/19 - 2D Materials Conference, **Valencia, SP**
38. 6/19 - Moiré in Paris Conference, **Paris, FR**
37. 5/19 - Nano Spain Conference, **Barcelona, SP**
36. 5/19 - U in Nanoscale Systems Workshop, **Zaragoza, SP**
35. 4/19 - University of Seoul Seminar, **Seoul, KR**
34. 4/19 - Korean Physical Society Meeting, **Daejeon, KR**
33. 4/19 - Spanish Network of 2D Materials, **Granada, SP**
32. 3/19 - Max Planck Workshop on Quantum Technologies, **Barcelona, SP**
31. 3/19 - IMDEA Seminar, **Madrid, SP**
30. 2/19 - European Quantum Technologies Conference, **Grenoble, FR**
29. 2/19 - SPIE Photonics West, **San Francisco, USA**
28. 2/19 - Van der Waals Colloquium, **Leiden University, NL**
27. 1/19 - Applied Physics Seminar, **Caltech, USA**
26. 1/19 - Correlations in Moiré, **KITP at UCSB, USA**
25. 1/19 - Physics Department Colloquium, **Bochum University, GER**

2018 and before

24. 10/18 - Nanotechnology Seminar, **ICN2, SP**
23. 9/18 - Physics Department Seminar, **Basel University, CH**
22. 7/18 - Magnetism and Superconductivity at the Nanoscale, **Coma-Ruga, SP**
21. 6/18 - Interaction of Light with Quantum Materials, **Castelldefels, SP**
20. 6/18 - Cambridge Graphene Center Seminar, **Cambridge University, UK**
19. 5/18 - BIST Graphene Conference, **ICFO, SP**
18. 5/18 - Walter Schottky Institute Seminar, **TU Munich, GER**
17. 6/17 - Centre of Ultra-Cold Atoms meeting, **MIT, USA**
16. 3/17 - Bacon+ Meeting, **Harvard University, USA**
15. 6/16 - ICFO L4G Seminar, **Barcelona, SP**
14. 6/16 - SPIE Photonics Europe, **Brussels, BE**
13. 9/15 - Graphene Optics Workshop 2015, **Exeter University, UK**
12. 9/15 - Superconductivity and Magnetism in Nanosystems, **Moscow, RU**
11. 11/14 - Bacon+ Meeting, **Harvard University, USA**
10. 10/14 - BBN Raytheon Seminar, **Cambridge, USA**
9. 8/14 - High Magnetic Fields 21 Conference, **Panama City, USA**
8. 7/14 - Jarillo-Herrero Group Seminar, **MIT, USA**
7. 2/14 - Englund Group Seminar, **MIT, USA**
6. 11/13 - QDev Seminar, **Niels Bohr Institute, DK**
5. 11/13 - Condensed Matter Seminar, **Stanford University, USA**
4. 11/13 - Applied Physics Seminar, **Yale University, USA**
3. 9/13 - Light for Graphene Seminar, **ICFO, SP**
2. 9/13 - Kouvenhowen Group Seminar, **TU Delft, NL**
1. 5/12 - Electrochemical Society Meeting, **Seattle, USA**

All On-Going Projects/Grants

2DSC	LaCaixa foundation, JuniorLeaders fellowship	305.700€	2018-2021	Project leader
2D-SIPC	EUHorizon 2020 Quantum Flagship “(ref: 820378)”	530.000€ personal, 3.000.000€ total;	2018-2022	Project leader
SuperTwist	ERC Starting Grant “(ref: 852927)”	1.780.000€	2020-2025	Project leader
MCQST EXC-2111	Munich Center of Quantum Science and Technology (MCQST) Projekt-ID: 390814868	77.000€/year	2022-	Core-member
MQV QTPE	Large Equipment Grant for the Chairs Quantum Materials Cleanroom, Quantum Technology Park, Munich Quantum Valley (MQV) AOST: 1705414	8.831.894€	2022-2026	Chair and Head of Cleanroom