

Nikita Kavokine

nkavokine@flatironinstitute.org

+1 (646) 595 5053

website: nkavokine.org

Born on February 14th, 1995

EMPLOYMENT

- **Simons Foundation, Flatiron Institute** New York, NY
Flatiron Research Fellow, Center for Computational Quantum Physics, and
Fellow of the Max Planck - NYC Center for Nonequilibrium Quantum Phenomena 09.2021 –
- **École Normale Supérieure** Paris
PhD student 09.2017 – 06.2021
Thesis: Many-body effects in nanoscale fluid transport
Advisor: Prof. Lydéric Bocquet

EDUCATION

- **École Normale Supérieure** Paris
PhD in Physics, advised by Prof. Lydéric Bocquet 2017 – 2021
- **École Normale Supérieure** Paris
Master International Center for Fundamental Physics (ICFP)
Theoretical Physics programme 2015 – 2017
- **École Normale Supérieure** Paris
Bachelor in Chemistry, *with highest honors* 2014– 2015
- **Lycée Louis le Grand** Paris
Classes préparatoires aux grandes écoles, Physics and Chemistry (PCSI-PC*) 2012 – 2014

AWARDS AND HONORS

- Young researcher prize in Micro- and Nanofluidics (Prix GDR MNF, 2020).
- Placed first at the entrance examinations of École Normale Supérieure, École Polytechnique, ENS Cachan and ESPCI (2014).
- *Médaille du Baccalauréat* (overall grade 20/20) awarded by French Minister of Education (2012).
- Ruta Quetzal fellowship (2011).
- Spanish government excellence fellowship, awarded each year to 24 French students studying Spanish (2008, 2009, 2010, 2012).

OTHER ACTIVITIES

- CO-FOUNDER of UPI systems, atomic force microscopy start-up company.
- TEACHING
 - Supervision of 2 bachelor students, 2 master students and 1 PhD student (B. Coquinot).
 - Exercise classes in fluid mechanics for third year students (CPES, PSL Research University), 2018 – 2021.
 - Exercise classes in general physics for first year students (CPES, PSL Research University), 2018 – 2021.
 - Oral examination of first year students in physics, Lycée Louis le Grand (PCSI), 2014 – 2016.
- RESEARCH INTERNSHIPS
 - *Harvard university, Cohen lab.* Theoretical study and experimental implementation of a new method for optical imaging of the brain (Oscillating Focus microscopy). Cambridge, MA. February – July 2016.
 - *EPFL, Laboratory of Synthesis and Natural Products.* Study of a palladium-catalysed isocyanide insertion reaction into the carbon-halogen bond of α -haloketones, supervised by Prof. Jieping Zhu. Lausanne, Switzerland. May – July 2015.
 - *École Normale Supérieure, Baigl lab.* Optical manipulation of liquid marbles. Paris, France. January 2015.

LANGUAGES

- French, mother tongue.
- Russian, mother tongue.
- English, fluent. Cambridge Certificate in Advanced English (grade A) and TOEFL (114/120).
- Spanish, fluent (Spanish baccalaureate).
- Italian, some knowledge.

PUBLICATIONS

9. N. Kavokine, M.-L. Bocquet and L. Bocquet. "Fluctuation-induced quantum friction in nanoscale water flows", arXiv 2105.03413, *under revision at Nature* (2021)
8. P. Robin, N. Kavokine and L. Bocquet, "Modeling of emergent memory and voltage spiking in ionic transport through angstrom-scale slits", *Science* **373**, 687 – 691 (2021).
7. N. Kavokine, R. R. Netz and L. Bocquet, "Fluids at the Nanoscale: from continuum to sub-continuum transport", *Annu. Rev. Fluid Mech.* **53**, 377 – 410 (2021).
6. S. Marbach, N. Kavokine and L. Bocquet, "Resonant osmosis across active switchable membranes", *J. Chem. Phys.* 152, 054704 (2020).
5. N. Kavokine, S. Zou, R. Liu, A. Niguès, B. Zou and L. Bocquet, "Ultrafast photomechanical transduction through thermophoretic implosion", *Nat. Commun.* 11, 50 (2020).
4. N. Kavokine, S. Marbach, A. Siria, L. Bocquet, "Ionic Coulomb blockade as a fractional Wien effect", *Nat. Nanotech.* 14, 573 – 578 (2019).
3. J. Vialetto, M. Hayakawa, N. Kavokine, M. Anyfantakis, S. Rudiuk, M. Morel, D. Baigl, "Magnetic actuation of discrete liquid entities with a deformable paramagnetic liquid substrate", *Angew. Chem. Int. Ed.* **56**, 16565 – 16570 (2017).
2. S. Lou, Y. Adam, E. Weinstein, E. Williams, K. Williams, V. Parot, N. Kavokine, S. Liberles, L. Madisen, H. Zeng, and A. Cohen, "Genetically targeted all-optical electrophysiology with a transgenic Cre-dependent Optopatch mouse", *J. Neurosci.*, **43**, 11059 – 11073, (2016). *Journal cover*.
1. N. Kavokine, S. Rudiuk, M. Morel, T. Bickel and D. Baigl, "Light-Driven Transport of a Liquid Marble with and against Surface Flows", *Angew. Chem. Int. Ed.*, **55**, 11183 – 11187 (2016).

CONFERENCE PRESENTATIONS

20. N. Kavokine, A. Robert, M.-L. Bocquet and L. Bocquet. *Quantum friction in nanoscale fluid transport*. APS March meeting, March 15 - 19, 2021.
19. N. Kavokine, S. Zou, R. Liu, A. Niguès and L. Bocquet. *Ultrafast photomechanical transduction through thermophoretic implosion*. March Meeting of the Mediterranean Institute of Fundamental Physics. Rome, Italy, March 5 - 7, 2020
18. N. Kavokine, S. Zou, R. Liu, A. Niguès and L. Bocquet. *Ultrafast photomechanical transduction through thermophoretic implosion*. CECAM workshop: Applications of Diffusiophoresis in Drying, Freezing and Flowing Colloidal Suspensions. Lausanne, Switzerland, October 30th - November 1st, 2020
17. N. Kavokine, S. Marbach, A. Siria, L. Bocquet. *Ionic Coulomb blockade as a fractional Wien effect*. Seminar at Zhejiang University, Hangzhou, China, September 11th, 2019
16. N. Kavokine, S. Zou, R. Liu, A. Niguès and L. Bocquet. *Ultrafast photomechanical transduction through thermophoretic implosion*. Seminar at Westlake Institute of Advanced Sciences, Hangzhou, China, September 10th, 2019
15. N. Kavokine, S. Marbach, A. Siria, L. Bocquet. *Ionic Coulomb blockade as a fractional Wien effect*. Seminar at Westlake Institute of Advanced Sciences, Hangzhou, China, September 10th, 2019
14. N. Kavokine, S. Marbach, A. Siria, L. Bocquet. *Ionic Coulomb blockade as a fractional Wien effect*. StatPhys 27, Buenos Aires, Argentina, 6 - 12 July, 2019
13. N. Kavokine, S. Marbach, A. Siria, L. Bocquet. *Ionic Coulomb blockade as a fractional Wien effect*. Seminar at FU Berlin, July 1st, 2019
12. N. Kavokine, S. Marbach, A. Siria, L. Bocquet. *Ionic Coulomb blockade as a fractional Wien effect*. International Soft Matter Conference, Edinburgh, 3 - 7 June, 2019
11. N. Kavokine, S. Marbach, A. Siria, L. Bocquet. *Ionic Coulomb blockade as a fractional Wien effect*. PhD and Postdoc seminar, Ecole Normale Supérieure, April 23rd, 2019
10. N. Kavokine, S. Marbach, A. Siria, L. Bocquet. *Ionic Coulomb blockade as a fractional Wien effect*. Seminar at Laboratoire Charles Coulomb, University of Montpellier, April 7th, 2019
9. N. Kavokine, S. Marbach, A. Siria, L. Bocquet. *Ionic Coulomb blockade as a fractional Wien effect*. Dead Sea Water: Nanomaterials at the water-energy nexus conference, 3 - 7 February 2019, Ein-Gedi, Israel
8. N. Kavokine, S. Marbach, A. Siria, L. Bocquet. *Ionic Coulomb blockade as a fractional Wien effect*. Micro- and Nanofluidics workshop, 12 - 16 November 2018, Lorentz Center, Leiden
7. N. Kavokine, S. Marbach, A. Siria, L. Bocquet. *Ionic Coulomb blockade as a fractional Wien effect*. International Conference on Novel Trends in Quantum and Mesoscopic Physics, 3 - 9 July 2018, Armenia.

6. N. Kavokine, S. Marbach, A. Siria, L. Bocquet. *Ionic Coulomb blockade and fractional Wien effect in ion transport across nanopores*. CECAM Workshop "Phoretic effects at the nanoscale", 17 - 20 April 2018, Lausanne, Switzerland.
5. N. Kavokine, D. Baigl. *Light-driven transport of liquid marbles with and against surface flows*. Flow17 conference, 3 - 5 July 2017, Paris, France.
4. N. Kavokine, Adam E. Cohen. *Oscillating Focus microscopy: a new tool for imaging in scattering media*. International Conference on Terahertz Emission, Metamaterials and Nanophotonics (TERAMETANANO-2), May 28th - June 1st 2017, Venice, Italy.
3. N. Kavokine, Adam E. Cohen. *Oscillating Focus microscopy: towards a new tool for brain imaging*. Seminar of the Formation Interuniversitaire de Physique, Ecole Normale Supérieure.
2. N. Kavokine, M. Anyfantakis, D. Baigl. *Reactive drops: light and special effects*. Experimental seminar at ESPCI, October 5th, 2015, Paris, France.
1. N. Kavokine, D. Baigl. *Water floating upon water: optical manipulation of liquid marbles*. International Conference on Terahertz Emission, Metamaterials and Nanophotonics (TERAMETANANO), 3rd - 10th April 2016, Cartagena, Colombia.