

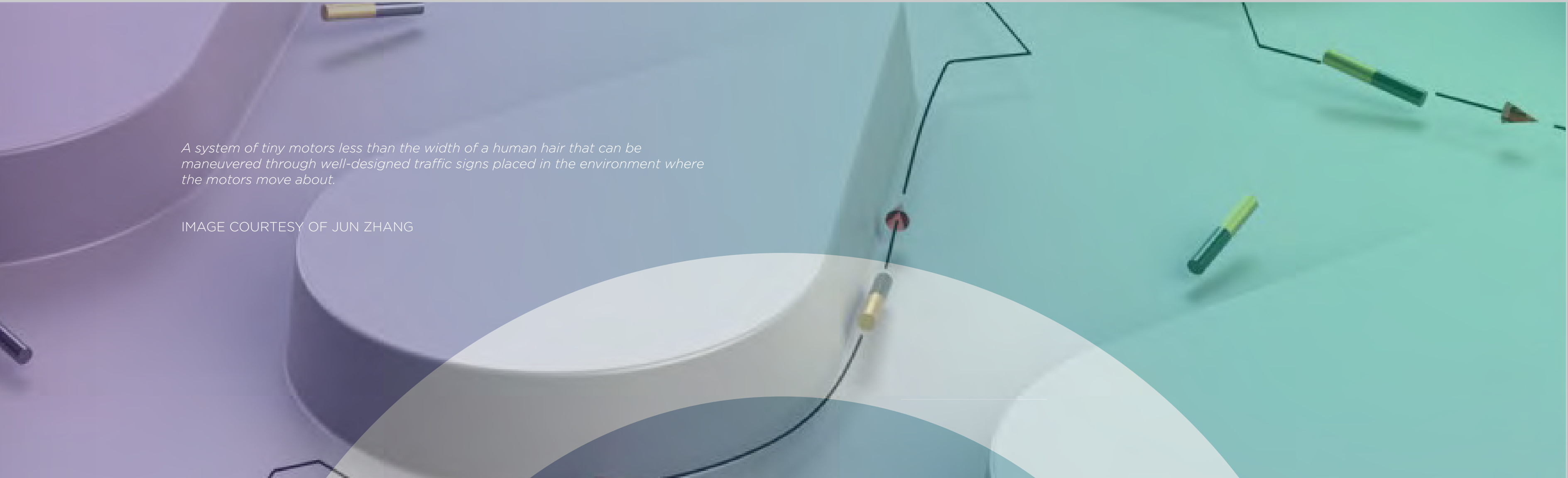


NYU SHANGHAI PHYSICS

Founded in 2012, NYU Shanghai is China's first Sino-US research university and the third degree-granting campus of the NYU Global Network. The university seeks to cultivate globally-minded graduates through innovative teaching, world-class research, and a commitment to public service.

Physics is a broad discipline, ranging from fundamental scientific questions to sophisticated technological applications. At its most basic, it is the study of matter and energy and their manifold interactions. Physicists study topics as wide-ranging as the underlying nature of space and time; the origins, large-scale structure, and future evolution of the universe; the behavior of stars and galaxies; the fundamental constituents of matter; the many different patterns in which matter is organized, including superconductivity, liquid crystals, or the various forms of magnetism in solids; the workings of biological matter, whether in molecules such as DNA, or cellular structures, or the transport of matter and energy in and across cells; and many others. Basic physics research has led to myriad technological advances that have transformed society from the 20th century through to the present day..

NYU Shanghai's Physics Program has the following missions: (1) Cultivating and furthering the education and training of physics students and emerging physicists through engaging and innovative programs; (2) promoting physics research and increasing its international visibility by strengthening research collaborations across disciplines and institutions; (3) providing a stimulating intellectual environment to enhance the professional growth of physics faculty.



A system of tiny motors less than the width of a human hair that can be maneuvered through well-designed traffic signs placed in the environment where the motors move about.

IMAGE COURTESY OF JUN ZHANG

EDUCATION & TRAINING

Undergraduate Studies

NYU Shanghai Degree [Undergraduate Studies](#)

NYU Shanghai students earn a Bachelor of Arts or Bachelor of Science degree conferred by New York University—the same degree awarded at our New York campus—as well as a Chinese diploma recognized by the Chinese government, qualifying graduates for opportunities both in China and around the world.

Graduate Training

NYU Shanghai offers the following graduate programs in Physics, providing candidates with academically rigorous training and extensive research experience in their field of study.

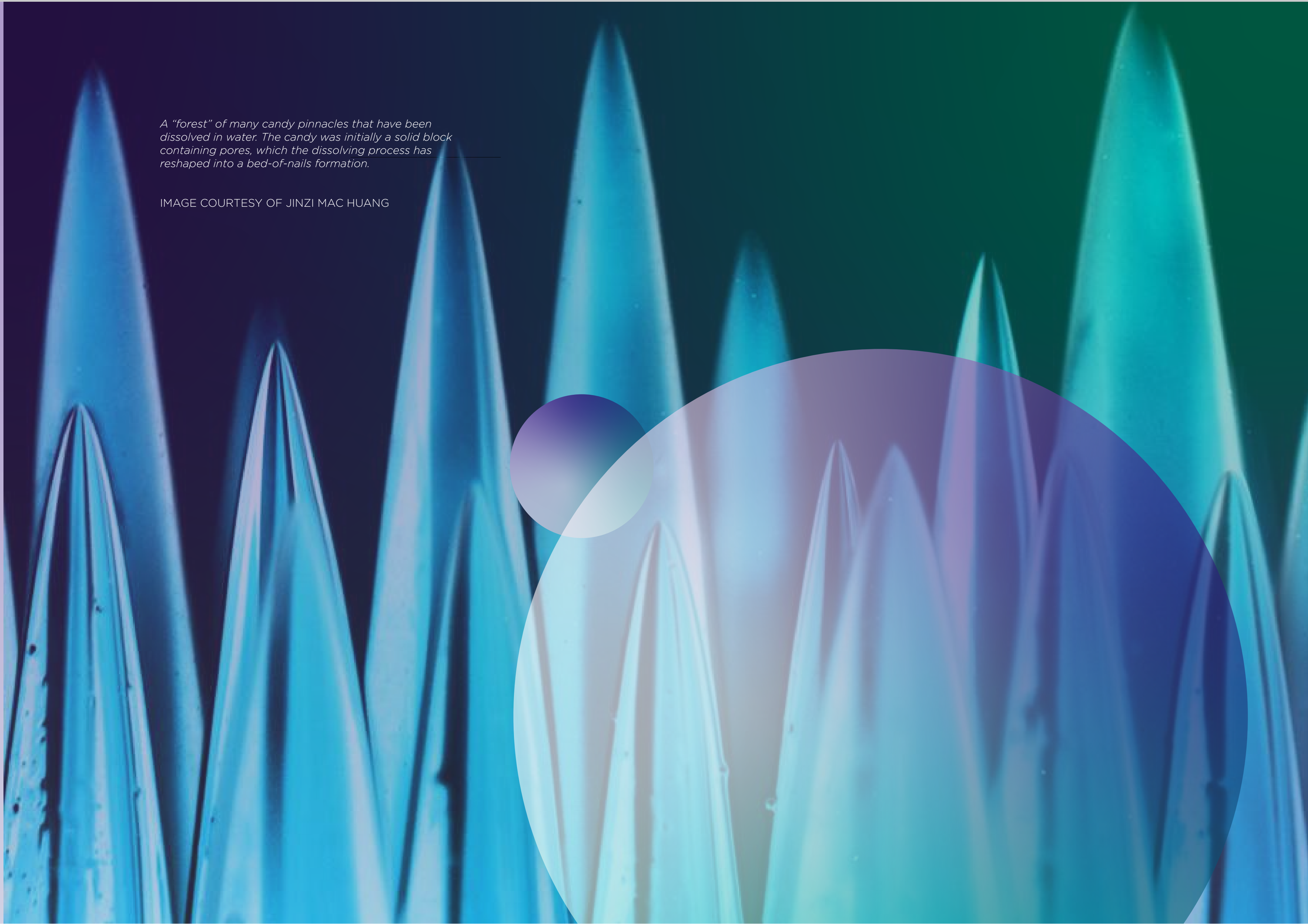
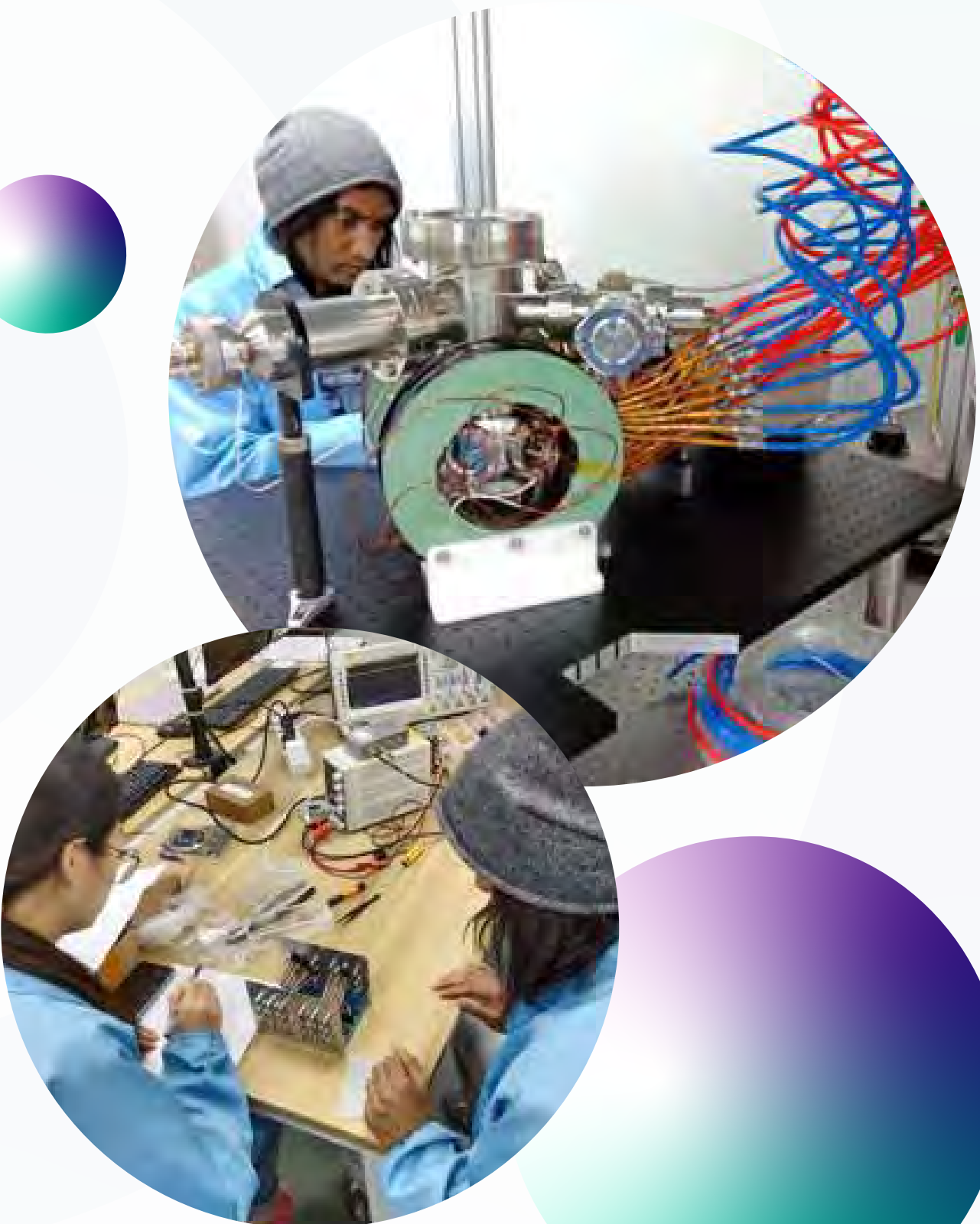
Ph.D. Program [Physics PhD Program | NYU Shanghai](#)

NYU Shanghai, in partnership with the NYU Graduate School of Arts and Science and the NYU Department of Physics, invites applications from exceptional students for PhD study and research in Physics.

Students are enrolled in the NYU GSAS Physics PhD program, complete their coursework at the NYU Department of Physics in New York, before transitioning to a full-time residency at NYU Shanghai where candidates will undertake their doctoral research under the supervision of NYU Shanghai faculty.

Highlights of the Program:

- NYU degree upon graduation
- Graduate coursework at the NYU Department of Physics in New York
- Research opportunities with and close mentorship by NYU Shanghai faculty
- Access to the vast intellectual resources of NYU GSAS and NYU Department of Physics
- The NYU-ECNU Institute of Physics at NYU Shanghai offers candidates a rich variety of activities and engagement opportunities including a revolving program of seminars and visiting scholars, a thriving community of PhD students, post-doctoral fellows, and research associates, and strong ties with other universities within and outside of China.
- Funding through the NYU Shanghai Doctoral Fellowship



A "forest" of many candy pinacles that have been dissolved in water. The candy was initially a solid block containing pores, which the dissolving process has reshaped into a better-made formation.

IMAGE COURTESY OF JINZI MAC HUANG

Ph.D. Program: The N.E.T. Program [Physics PhD Program | ECNU](#)

The NYU Shanghai-ECNU Joint Graduate Training Program (N.E.T.) is a program in which NYU Shanghai faculty, through collaborative arrangements with affiliated departments at ECNU, advise and incorporate ECNU graduate students into their research teams. In particular, NYU Shanghai Physics faculty, in partnership with the State Key Laboratory of Precision Spectroscopy and School of Physics and Electronic Science at East China Normal University (ECNU), invites applications from exceptional students for PhD study and research in Optics and Physical Electronics. Participating students will undertake their doctoral research under the supervision of NYU Shanghai faculty.

Highlights of the Program:

- Mentorship by a devoted group of faculty advisers who are engaged in cutting-edge research and interdisciplinary collaboration.
- Collaboration with renowned scholars from all over the world at the NYU-ECNU Institute of Physics at NYU Shanghai.
- Access to the education and educational resources of East China Normal University, New York University, and NYU Shanghai.
- Upon successful completion of the program, students are awarded an ECNU PhD degree.
- Funding through the ECNU Doctoral Fellowship

Master's Program: The N.E.T. Program [Physics Master Program | ECNU](#)

In addition to the N.E.T. Ph.D. track, NYU Shanghai Physics faculty, in partnership with schools at ECNU also invites applications from students for the Master's programs in Optics, Physical Electronics and Ecology. Master's students will complete academically enriching coursework and gain new experience and insight in their research.

RESEARCH

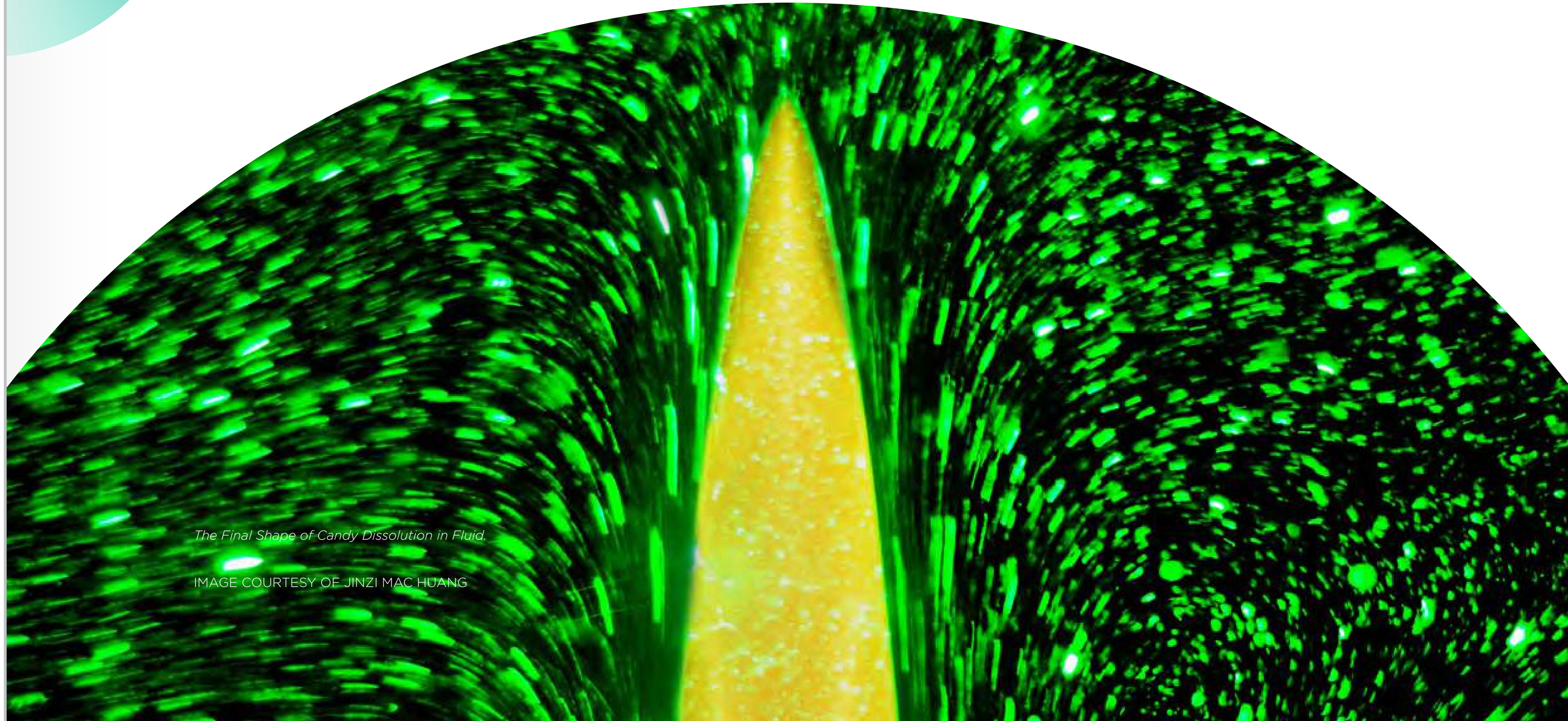
     **NYU-ECNU**
Institute of Physics
at NYU Shanghai

NYU-ECNU Institute of Physics at NYU Shanghai

The NYU-ECNU Institute of Physics at NYU Shanghai [↗](#) is an internationally renowned center for research and intellectual exchange in the heart of Shanghai. The Institute is dedicated to supporting the evolving needs of researchers at the forefront of their fields of study, especially in the areas of laser spectroscopy, quantum condensed matter, quantum manipulation and information, and precision measurements. The Institute is privileged to combine and leverage the robust foundation of physics research from its three partner institutions to generate new insights and identify exciting theoretical and experimental research directions. Specific areas of interest include the areas of particle physics and cosmology, hard and soft condensed matter physics, biological physics, atomic, molecular, and optical physics, nanomaterials, and expertise in precision laser spectroscopy and nuclear magnetic resonance.

The Institute co-directors are Professor Guoxiang Huang (Professor of Physics, East China Normal University) and Professor Daniel L. Stein (Professor of Physics and Mathematics, New York University). Drawing on the strengths of NYU and ECNU, the Institute is guided by its mission of fostering US-Chinese scientific collaborations, and includes an extensive component of international study and exchange. The Institute features an active visiting scholar program, a regular seminar series, and a variety of conferences and workshops to stimulate collaboration between scholars from many different universities and research areas.

The Institute is currently inviting applications for both visiting and renewable contract positions.



The Final Shape of Candy Dissolution in Fluid

IMAGE COURTESY OF JINZI MAC HUANG

Student Internship Opportunities: SRPP

The NYU-ECNU Institute of Physics at NYU Shanghai provides a number of research experiences for students everywhere. One such program is the NYU Shanghai Summer Undergraduate Research Experience Program in Physics (SRPP). SRPP is designed to foster entry into physics research-centered careers for highly motivated undergraduate students with a strong interest in Physics or related scientific discipline.

Students apply for positions in a 3-month summer program with a flexible starting date. During the program, students will have the opportunity to actively participate in research projects under the mentorship of a professor who is active at the forefront of his or her field of physics. Students are matched to faculty primarily on the basis of their background preparation and areas of interest. They work either directly with faculty or with postdoctoral fellows or with graduate students as appropriate. Each student conducts a research project under the direction of his or her mentor.

At the end of the program, a presentation and a project summary are required. Successful applicants will receive financial support from NYU Shanghai.



The periodic flapping motion of the tandem flags is revealed by a strobe-light. The flapping frequency of two flags is the same, but they take on different phases and amplitudes.

COVER IMAGE COURTESY OF JUN ZHANG

Faculty Advisors

*By alphabetical order of last name



Tim Byrnes [Tim Byrnes | Research NYU Shanghai](#)
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Recent Publications: [Publications - Tim Byrnes](#)

Tim Byrnes is an Associate Professor of Physics at NYU Shanghai. He is also a co-PI at the Center of Quantum and Topological Systems at NYU Abu Dhabi. He holds a PhD from the University of New South Wales in Sydney, Australia.
Research Interests: Professor Byrnes' research interests are in quantum information technologies, condensed matter physics, and AMO (atomic, molecular, optical) physics. Specifically, he is interested in theoretical and experimental applications of Bose-Einstein condensates to quantum technologies. He has worked on a variety of topics including exciton-polariton condensation, quantifying quantum states, quantum supremacy, topological quantum computing, Ising machines, quantum simulation, and quantum finance.



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Recent Publications: [Publications - Hanghui Chen](#)

Hanghui Chen is an Assistant Professor of Physics at NYU Shanghai. Prior to joining NYU Shanghai, he was a postdoctoral fellow at Columbia University. He holds a Ph.D. from Yale University and a B.S. from Peking University.
Research Interests: Professor Chen's research interests include first-principles modeling and design of complex materials, in particular transition metal oxides and their heterostructures; ab initio study of correlation effects such as magnetism and superconductivity. His work has appeared in Nature Communications, Science Advances, PNAS, Phys. Rev. Lett., Nano Lett. and Advanced Materials.
Education: • Ph.D., Physics, Yale University, 2012 | • B.S., Physics, Peking University, 2004



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Recent Publications: [Publications - Jinzi Mac Huang](#)

Jinzi Mac Huang is an Assistant Professor of Mathematics at NYU Shanghai. Interested in experimental fluid dynamics and applied mathematics, he collaborates with the Applied Math Lab at the Courant Institute, the Applied Math Lab Shanghai at NYU Shanghai, and the Joint Physics Lab at NYU-ECNU Institute of Physics.
Research Interests
• Applied Mathematics
• Fluid Dynamics
• Geophysics
• Soft Matter Physics
Education
• PhD, Mathematics, Courant Institute, New York University
• BS, Applied Physics & Applied Mathematics, Zhiyuan College, Shanghai Jiao Tong University



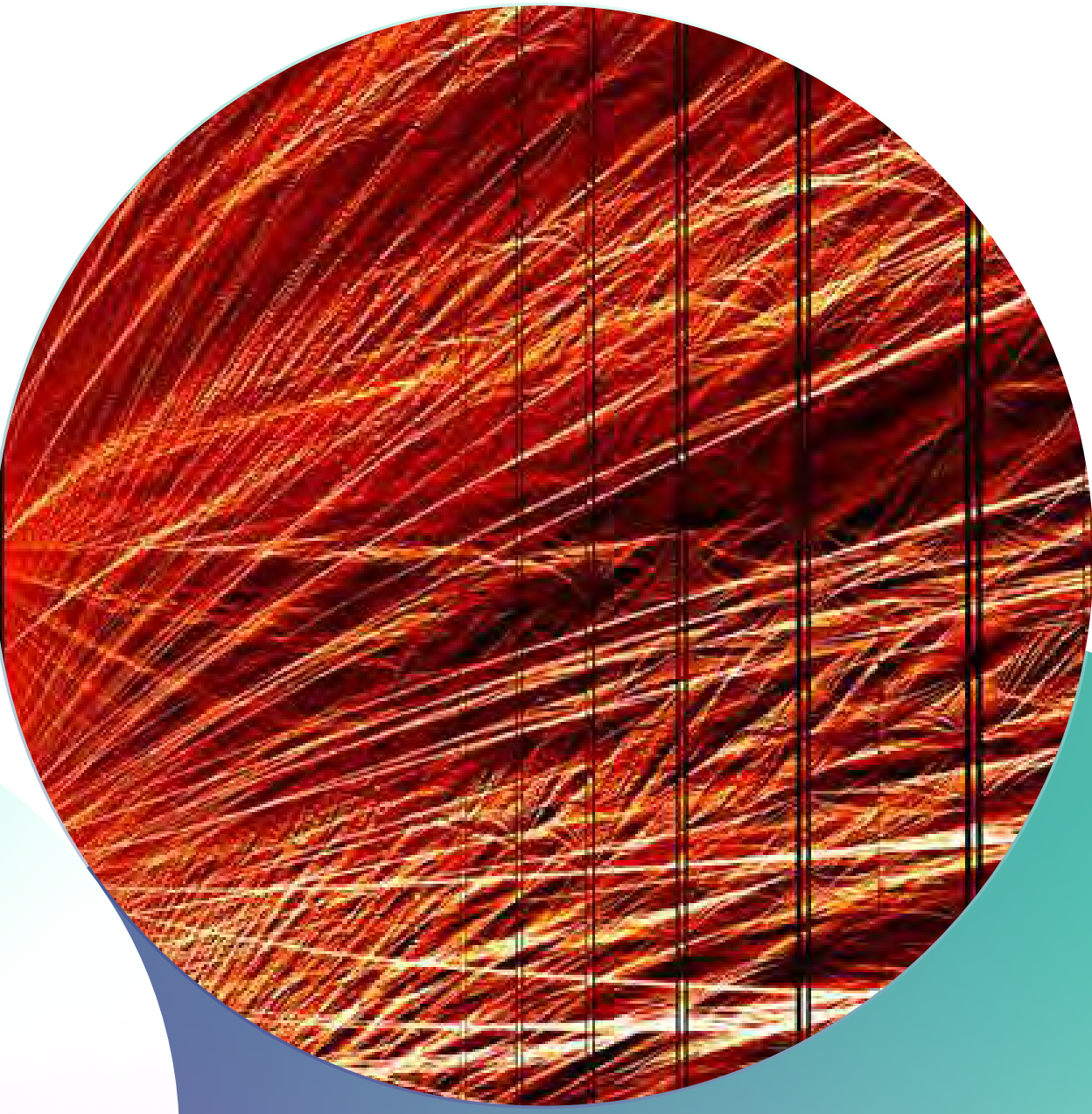
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Recent Publications: [Publications - Pilkyung Moon](#)

Pilkyung Moon is Assistant Professor of Physics at NYU Shanghai. He is also a co-PI at the Center of Quantum and Topological Systems at NYU Abu Dhabi. Prior to joining NYU Shanghai, he was Research Fellow at Korea Institute for Advanced Study in 2013-2014 and assistant professor in Department of Physics at Tohoku University in 2011-2013. He holds a PhD from Seoul National University.
Research Interests: Moon's research interests are condensed matter theory, electronic properties of atomically thin films (graphene, hBN, TMDs) with recent emphasis on the moiré interference between layers, quasicrystals, and quantum Hall effect. His work has appeared in Nature, Science, Nature Nanotechnology, and Physical Review.
Education:
Ph.D., Materials Science and Engineering, Seoul National University, 2009
B.S., Materials Science and Engineering, Seoul National University, 2001



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Recent Publications: [Publications - Jun Zhang](#)

Jun Zhang is a Professor of Physics and Mathematics at NYU Shanghai and at NYU's campus in New York City. Since 2001 he has been the Co-Director of the Applied Math Laboratory in the Courant Institute of Mathematical Sciences. He holds a Ph.D. in physics from the Niels Bohr Institute at the University of Copenhagen. He is a life member and an elected Fellow of the American Physical Society (APS).
Research Interests: Professor Zhang's research interests include the physics of fluids, which covers biomechanics and bio-locomotion (organisms swimming, walking and flying), geophysical fluids (thermal convection, continental dynamics), solid-on-solid friction, and self-organized phenomena at different scales.



Hofstadter's butterfly
IMAGE COURTESY OF PILKYUNG MOON



NYU SHANGHAI PHYSICS