

Citation for Hong Wang. The Ostrowski Prize for 2025 is awarded to Hong Wang for her influential work in harmonic analysis, solving central problems in the field like the Kakeya set conjecture in $\mathbb{R}^3$.

The Kakeya set conjecture is a central problem in restriction theory in harmonic analysis. It is an important roadblock – many conjectures in the field imply the Kakeya set conjecture. For a long time, the proof of the Kakeya set conjecture was out of reach, and therefore all these other conjectures were out of reach. The Kakeya problem was proposed in 1917 by the Japanese mathematician Sōichi Kakeya: What is the smallest possible area in which a needle can be rotated 180 degrees in a plane? Such areas are called Kakeya needle sets. The Kakeya set conjecture reads now as follows: a set in Euclidean space that contains a unit line segment in every direction must have a Hausdorff dimension equal to the dimension of the space. This has been known to be true in one and two spatial dimensions, but only partial results were known in higher dimensions. Recently, in early 2025, the Kakeya set conjecture has been proven in three spatial dimensions by Hong Wang and her collaborator Joshua Zahl.

Hong Wang, born 1991, is a Chinese mathematician who works in Fourier analysis and geometric measure theory. She earned her bachelor's degree in mathematics from Peking University and her Diplôme d'ingénieur from Ecole Polytechnique in Palaiseau and a master's degree from Paris-Sud University. In 2014, she started her doctoral study in mathematics under the supervision of Larry Guth at the Massachusetts Institute of Technology. Wang became a member of the Institute for Advanced Study, Princeton, in 2019 and an assistant professor at the University of California in Los Angeles in 2021. In 2023, she was appointed as an associate professor at the NYU Courant Institute, where she is now a full professor joint with the Institut des Hautes Études Scientifiques in Bures-sur-Yvette.

The Ostrowski Foundation was created by Alexander M. Ostrowski who was for many years a professor at the University of Basel. He left his entire estate to the foundation and stipulated that the income should provide a prize for outstanding achievements in mathematics. The prize is awarded every other year and is currently 100,000 Swiss francs.