

GANG TIAN



Professor Gang Tian was born in Nanjing, China. He received his bachelor's in mathematics from Nanjing University in 1982, his master's from Peking University in 1984, and his Ph.D. from Harvard University in 1988 under the direction of S. T. Yau. He served as an assistant professor of mathematics at Princeton from 1988 to 1990, returning as full professor in 2003 after appointments at Stony Brook, New York University, and the Massachusetts Institute of Technology, where he held the chair of Simons Professor of Mathematics. He was named the Eugene Higgins Professor of Mathematics at Princeton in 2009.

While at Princeton he strengthened the geometric analysis group. He supervised 33 Ph.D. theses from Princeton and elsewhere, and mentored a large number of postdocs. Overall, he supervised over 40 Ph.D. theses from at least 11 institutions.

Gang currently holds the positions of vice president of Peking University and professor and director of the Beijing International Center for Mathematical Research (BICMR). He is also a member of the Scientific Council of the Abdus Salam International Centre for Theoretical Physics in Italy.

Gang made fundamental contributions to geometric analysis, complex geometry, and symplectic geometry. Following is a sample of his many results. He proved the existence of Kahler-Einstein metrics on compact complex surfaces with positive first Chern class. He proved what's now known as the Bogomolov-Tian-Todorov theorem for Calabi-Yau manifolds. With Yongbin Ruan of the University of Michigan, he established a theory of quantum cohomology and Gromov-Witten invariants on semi-positive symplectic manifolds, and in particular, symplectic manifolds of complex dimension-3, as well as Calabi-Yau spaces. This result implies the associativity of the quantum cohomology ring of semi-positive symplectic manifolds. He constructed the Gromov-Witten invariants for closed symplectic manifolds. He developed a compactness theory for high-dimensional Yang-Mills fields and found a deep connection between high-dimensional gauge fields and calibrated geometry.

Gang introduced the theory of K-stability, which is central in the theory of geometric stability. He initiated the Analytical Minimal Model program through Kähler-Ricci flow, now known as Tian-Song MMP theory in complex geometry. Together with John Morgan, the emeritus director of the Simons Center for Geometry and Physics at Stony Brook University, Gang gave an exposition of Perelman's proof of the Poincaré Conjecture and Thurston's Geometrization Conjecture. More recently, he solved the Yau-Tian-Donaldson conjecture, a central problem in Kähler geometry, which was independently solved by Xiuxiong Chen and Song Sun of Stony Brook University, and Simon Donaldson of the Simons Center for Geometry and Physics at Stony Brook University. With Jeff Streets at the University of California-Irvine, Gang discovered new geometric flows that are now central tools in complex geometry.

Gang won the Alan T. Waterman Award in 1994 and the Oswald Veblen Prize in 1996. He gave an invited lecture in the geometry section of the International Congress of Mathematics in 1990 and a plenary lecture at the International Congress of Mathematicians in 2002. He was elected to the National Academy of China in 2001 and the American Academy of Arts and Sciences in 2004. He has served as editor for a number of mathematical journals including *Annals of Mathematics*, and on many mathematics advisory boards.