

Properties of Keller Maps and Proof of 2-Dimensional Jacobian Conjecture

Speaker: Prof. Yucai Su, Tongji University and Jimei University, China.

Zoom Room ID: 998 4877 4921

Passcode: ISU

Time: Noon-12:50pm on Thursday 03/09/2023

Abstract: For any two polynomials $F(x, y)$, $G(x, y)$ on two variables x, y with coefficients in the complex field and with a nonzero constant Jacobian determinant, there corresponds a polynomial map, known as a Keller map, σ , defined from 2-dimensional complex vector space to itself sending the point $p = (a, b)$ to $\sigma(p) = (F(a, b), G(a, b))$ for complex numbers a, b . Assume σ is not injective. Let V be the set of pairs of points which are not equal but have the same image under σ . We obtain three geometric properties of V , which enable us to give a proof of 2-dimensional Jacobian conjecture. In particular, the first property of V says that if $(p_1, p_2) = ((x_1, y_1), (x_2, y_2))$ in V , goes to the infinity, then $|y_1| + |y_2| = o(|x_1| + |x_2|)$.

Speaker Information: Professor Yucai Su is a professor in Tongji University and Jimei University, China. He has worked as a visiting scholar or postdoctoral researcher in Queen Mary and Westfield College, Concordia University, University of Quebec at Montreal, Harvard University, University of Sydney for a total of 10 years. His main research interests include Lie algebras, representation theory and Jacobian problem. In particular, he has been studying the Jacobian Conjecture for eighteen years. He is an editor of Algebra Colloquium and Journal of Mathematical Study, and published over 100 papers in Adv. Math., J. Eur. Math. Soc., Proc. London Math. Soc., Comm. Math. Phys., Math. Z., Israel J. Math., etc.. Recently, Prof. Yucai Su claimed that he solved the 2-dimensional Jacobian Conjecture by using local bijectivity of Keller maps.