

THE GLOBAL INVERTIBILITY PROBLEM AND THE JACOBIAN CONJECTURE

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The problem of finding conditions guaranteeing a local invertible map is globally invertible goes back at least to the works of Hadamard, in the early 19th century. Maybe the most known open problem here is the Jacobian conjecture, raised by Keller in 1939, claiming that a polynomial map $F : \mathbb{K}^n \rightarrow \mathbb{K}^n$, where \mathbb{K} is a field of characteristic 0 and $n \geq 2$, becomes an automorphism provided its Jacobian determinant is a nonzero constant. If $\mathbb{K} = \mathbb{R}$, the claim that F is invertible if its Jacobian determinant is different from zero throughout \mathbb{R}^n was disproved by a celebrated counterexample provided by Pinchuk in 1994.

This talk will discuss the above subject.