

Mathematics Department Colloquium

Organizer: Nicolai Reshetikhin

Thursday, 4:10–5:00pm, 60 Evans

Oct. 18 **Maciej Zworski**, UC Berkeley

Fifty years of Lewy's counterexample

Exactly fifty years ago Hans Lewy of Berkeley published a four page Annals of Mathematics paper which changed the history of linear partial differential equations. He surprised everybody (including, according to the paper, himself) by finding a nonvanishing three dimensional vector field, V , with complex coefficients, such that the equation $Vu = f$ *cannot be solved* for u , near any point, for a generic smooth function f .

The theory of solvability which followed was developed by Lars Hörmander, Charles Fefferman, Louis Nirenberg, and many other leading analysts, and the sufficiency of the conjectured condition for solvability was established by Nils Dencker only recently (and published just one year shy of the fifty year anniversary).

In this talk, by a non-expert for non-experts, I will recall some of this history, explaining the crucial connection with local symplectic geometry.