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The question of solvability

In the fifties, Ehrenpreis and Malgrange proved that all constant coefficient linear partial differential equations were solvable. The consensus at that time was that all PDE's were solvable, and therefore it came as a surprise when Hans Lewy in 1957 constructed a first order linear PDE that was not solvable.

A rapid development in the sixties led to the Nirenberg-Treves conjecture in 1970: that condition (Psi) is necessary and sufficient for solvability.

In this lecture, we shall present the recent developments which have resulted in the proof of the Nirenberg-Treves conjecture.