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Holomorphic Singular Integrals: counterexamples to the L^p theory

This talk concerns recent and ongoing joint work with E. M. Stein on the optimality of the (analytic and geometric) assumptions that grant L^p -regularity for families of singular integral operators in higher dimension that are modeled after the one-dimensional Cauchy integral and the Szego projection. As is well known, dimension-induced obstructions (e.g., lack of conformal mapping) have major repercussions on the classical, one-dimensional theory.