Geometry of real hypersurfaces meets Subelliptic PDEs

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In his seminal work from 1979, Joseph J. Kohn invented his theory of multiplier ideal sheaves connecting a priori estimates for the d-bar problem with local boundary invariants constructed in purely algebraic way.

I will explain the origin and motivation of the problem, and how Kohn's algorithm reduces it to a problem in local geometry of the boundary of a domain.

I then present my recent work with Sung Yeon Kim based on the technique of jet vanishing orders, and show how it can be used to control the effectivity of multipliers in Kohn's algorithm, subsequently leading to precise a priori estimates.

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