(Common) Abstract

Multiplier ideal sheaves identify the jet directions where estimates for partial differential equations fail. They were first introduced by Joseph J. Kohn to study the complex Neumann problem for weakly pseudoconvex domains and by Alan M. Nadel to study the existence of Kaehler-Einstein metrics for Fano manifolds. The technique of multiplier ideal sheaves injects in a new way methods of algebraic geometry into problems of analysis. It also opens new channels of applying analysis to problems in algebraic geometry, leading to the solution or partial solution of a number of longstanding open problems in algebraic geometry such as the Fujita conjecture, the deformational invariance of plurigenera, and the finite generation of the canonical ring.