The Diederich-Fornæss index and its applications

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Abstract

Diederich and Fornæss showed in 1977 that for any bounded pseudoconvex domain Ω with C^2–boundary in a Stein manifold, there exist a positive constant η and a defining function r such that $-(-r)^\eta$ is strongly plurisubharmonic on Ω. The Diederich-Fornæss exponent η has found many applications in several complex variables, including the mapping problem and L^2-estimate of the $\bar{\partial}$-operator. In this talk, we will discuss these applications and especially its connection with non-existence of Stein domains with Levi-flat boundaries in complex manifolds. This talk is based in part on joint work with Mei-Chi Shaw.