Compactness of Hankel Operators and Analytic Discs in the Boundary of Pseudoconvex Domains

Sönmez Şahutoğlu
University of Michigan, Ann Arbor, MI

Abstract

Using several complex variables techniques we want to investigate the interplay between the geometry of the boundary and compactness of Hankel operators. Let $\beta$ be a function smooth up to the boundary on a smooth bounded pseudoconvex domain $\Omega \subset \mathbb{C}^n$. We show that if $\Omega$ is convex or the Levi form of $b\Omega$ is of rank at least $n - 2$ then compactness of the Hankel operator $H_\beta$ implies that $\beta$ is holomorphic “along” analytic discs in the boundary. Furthermore, when $\Omega$ is convex in $\mathbb{C}^2$ we show that the condition on $\beta$ is necessary and sufficient for compactness of $H_\beta$. This is a joint work with Željko Ćučković.