Boundary regularity of $\overline{\partial}$ and non-existence of smooth Levi-flat hypersurfaces in the complex projective space

Abstract

In 1993 D. Cerveau raised the problem of the non-existence of smooth Levi-flat real hypersurfaces in $\mathbb{CP}_n$, $n \geqslant 2$, ie. of real hypersurfaces admitting a local foliation by complex-analytic hypersurfaces.

In this lecture we will discuss the boundary regularity of the $\overline{\partial}$-operator on pseudoconcave and pseudoconvex domains in $\mathbb{CP}_n$ and its applications for the above mentionned problem.