VIRTUAL EAST-WEST SCV SEMINAR

October 12, 2021

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ALGEBRAIC DEGREE OF THE BERGMAN KERNEL

Let $G \subset \mathbb{C}^2$ be a smoothly bounded pseudoconvex domain. Suppose the Bergman kernel of G is algebraic of degree d. We show that the boundary ∂G is of finite type, and the type r satisfies $r \leq 2d$. The inequality is optimal in the sense that the equality holds for egg domains, by the explicit formula of D'Angelo. In particular, a smoothly bounded weakly pseudoconvex domain cannot have rational Bergman kernel, unless it is strongly pseudoconvex and biholomorphic to $\mathbb{B}^2$ by a rational map. Some generalizations and questions in higher dimensions will be also discussed. This work is joint with P. Ebenfelt and M. Xiao.