2019 Taipei Conference on Geometric Invariance and Partial Differential Equations
Institute of Mathematics, Academia Sinica, Taipei, Taiwan
January 11 - 14, 2019

Relative fundamental solution to the CR invariant powers of sub-Laplacian and the deformation complex of CR structures

Kengo Hirachi

The University of Tokyo
E-mail:**hirachi@ms.u-tokyo.ac.jp**

Abstract

It is well-known that CR invariant powers of sub-laplacian P_k of order $2k$ on S^{2n+1} has a fundamental solution (and hence $\ker P_k = \{0\}$) if and only if $k \in \{1, 2, \dots, n\}$. The critical case P_{n+1} is studied by Graham and Geller: $\ker P_{n+1}$ is the space of CR pluriharmonic functions and P_{2n+2} has a relative fundamental solution. In this talk, I'll give a relative fundamental solutions for higher order P_k and show that $\ker P_k$ agree with the kernel of the fist BGG operators. In particular, we observe that $\ker P_{n+2}$ agrees with the kernel of the first operator of the deformation complex of CR structures. This is a key fact in the study of obstruction flat CR manifolds or strictly pseudoconvex domains with no logarithmic singularity in the Bergman kernel. This is a joint work with Makoto Nakamura at University of Tokyo.