Journal of Lie Theory 12 (2002) 217–243

B. Trojan
Instytut Matematyczny, Uniwersytet Wroclawski, Plac Grunwaldzki 2/4, 50-384 Wroclaw, Poland

Poisson Kernels and Pluriharmonic H² Functions on Homogeneous Siegel Domains

We prove that a real function F defined on a homogeneous not necessarily symmetric Siegel domain satisfying an $\mathcal{H}^2$ condition is pluriharmonic if and only if $\mathbf{H}F = 0$, $\mathcal{L}F = 0$, $LF = 0$, where $\mathbf{H}$, $\mathcal{L}$, L are second order differential operators. This generalizes the result of E. Damek, A. Hulanicki, D. Müller, and M. Peloso ["Pluriharmonic $\mathcal{H}^2$ functions on symmetric irreducible Siegel domains, Geom. Funct. Anal. 10 (2000) 1090–1117], where symmetric domains were considered. Our approach to study non-symmetric case is based on T-algebras introduced by E. B. Vinberg ["The theory of convex homogeneous cones, Trans. Moscow Math. Soc. 12 (1963) 340–403].