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S. Gindikin
Dept. of Mathematics, Rutgers University, 110 Frelinghysen Road, Piscataway, NJ 08854-801, U.S.A.
gindikin@math.rutgers.edu

H. Ishi
Graduate School of Mathematics, Nagoya University, Furo-cho, Chikusa-ku, Nagoya 242-8602, Japan
hideyuki@math.nagoya-u.ac.jp

Cohomological Laplace Transform on Non-convex Cones and Hardy Spaces of $\bar{\partial}$-cohomology on Non-convex Tube Domains

We consider a class of non-convex cones V in $\mathbb{R}^n$ which can be presented as (not unique) union of convex cones of some codimension q which we call the index of non-convexity. This class contains non-convex symmetric homogeneous cones studied in D'Atri-Gindikin [*Siegel domain realization of pseudo-Hermitian symmetric manifolds*, Geom. Dedicata **46** (1993) 91–125] and Faraut-Gindikin [*Pseudo-Hermitian symmetric spaces of tube type*, in: Topics in Geometry, Progr. Nonlinear Differential Equations Appl. **20** (1996) 123–154]. For these cones we consider a construction of dual non-convex cones V^* and corresponding non-convex tubes T and define a cohomological Laplace transform from functions at V to q-dimensional cohomology of T using the language of smoothly parameterized Čech cohomology. We give a construction of Hardy space of q-dimensional cohomolgy at T.

Keywords: Non-convex cone, Laplace transform, Paley-Wiener Theorem, symmetric cone, cohomology, Hardy norm.

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