Boundary Values of Weighted Bergman Spaces on Homogeneous Siegel Domains

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It is well known that every element of the Hardy space H^p on the unit disc U in $\mathbb{C}$ (or the upper half-plane $\mathbb{C}_+$) has non-tangential limits a.e. on the boundary, and that this induces an isometry of H^p onto $L^p(\partial U)$.

Results of this kind have been investigated in various ways, either considering Hardy spaces on higher-dimensional domains, or other spaces of holomorphic functions. For example, in [1] the boundary values of the mixed-norm weighted Bergman spaces

$$A_s^{p,q} = \left\{ f \in \mathrm{Hol}(\mathbb{C}_+) \colon \int_0^\infty \left(\int_{\mathbb{R}} |f(x+iy)|^p \, \mathrm{d}x \right)^{q/p} y^{qs} \, \frac{\mathrm{d}y}{y} < \infty \right\}$$

(modification if $\max(p,q) = \infty$) were identified as the distributions T on $\mathbb{R}$ (modulo polynomials) which belong to the homogeneous Besov space $\dot{B}_{-s}^{p,q}$ and whose Fourier transforms are supported in $\mathbb{R}_+$.

This latter result was later extended to mixed norm weighted Bergman spaces on irreducible symmetric Siegel domains of type I in [2]. In this talk we shall present some further extensions of these results to the case of homogeneous Siegel domains of type II. This is joint work with M. M. Peloso.

Riferimenti bibliografici

[1] Ricci, F., Taibleson, M., Boundary Values of Harmonic Functions in Mixed Norm Spaces and Their Atomic Structure, *Ann. Scuola Norm. Sup. Pisa Cl. Sci.* **10** (1983), p. 1–54.

[2] Békollé, D., Bonami, A., Garrigós, G., Ricci, F., Littlewood–Paley Decompositions Related to Symmetric Cones and Bergman Projections in Tube Domains, *P. Lond. Math. Soc.* **89** (2004), p. 317–360.