BESOV SPACES AND THE BOUNDEDNESS OF WEIGHTED BERGMAN PROJECTIONS OVER SYMMETRIC TUBE DOMAINS

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Abstract

We extend the analysis of weighted Bergman spaces $\mathcal{A}_{\mathbf{s}}^{p,q}$ on symmetric tube domains, contained in [**2**], to the case where the weights are positive powers $\Delta_{\mathbf{s}} \doteq \Delta_1^{s_1 - s_2} \cdot \ldots \cdot \Delta_{r-1}^{s_{r-1} - s_r} \Delta_r^{s_r}$ of the principal minors $\Delta_1, \ldots, \Delta_r$ on the symmetric cone Ω. We discuss the realization of the boundary distributions of functions in $\mathcal{A}_{\mathbf{s}}^{p,q}$ in terms of Besov-type spaces $B_{\mathbf{s}}^{p,q}$ adapted to the structure of the cone. We give a necessary and a sufficient condition on the values of p, q and $\mathbf{s}$ for which this identification between $\mathcal{A}_{\mathbf{s}}^{p,q}$ and $B_{\mathbf{s}}^{p,q}$ holds. We also present a continuous version of these latter spaces which is new even for the case $s_1 = \cdots = s_r$ considered in [**2**]. We use these results to discuss multipliers between Besov spaces and the boundedness of the weighted Bergman projection $P_{\mathbf{s}} \colon L_{\mathbf{s}}^{p,q} \to \mathcal{A}_{\mathbf{s}}^{p,q}$. The situation in the rank two case is specifically dealt with.