REPRESENTING SYSTEMS IN BERGMAN-TYPE SPACES $A^{-\infty}$

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ABSTRACT. Let Ω be a bounded domain in $\mathbb{C}^n$ and $d(z) = \inf_{\zeta \in \partial\Omega} |z - \zeta|$, $z \in \Omega$. The Bergman-type space $A^{-\infty}(\Omega)$ of holomorphic functions in Ω with polynomial growth near the boundary $\partial\Omega$, endowed with its natural inductive limit topology, is defined as:

$$A^{-\infty}(\Omega) = \left\{ f \in \mathcal{O}(\Omega) : \exists\, k > 0,\ \sup_{z \in \Omega} |f(z)|\ [d(z)]^k < \infty \right\}.$$

This kind of spaces, as is well-known, arises from Schwartz' theory of distributions.

I will talk about the following problem: Is it possible to represent functions in $A^{-\infty}(\Omega)$ by series of simpler functions, like exponential functions or rational fractions? Applications to functional equations are also discussed.

The results are based on joint works with Abanin and Ishimura.

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