BERGMAN SPACES

Abstract:

Bergman spaces form an important class of function spaces in complex analysis, consisting of holomorphic functions that are p-integrable with respect to area measure on a domain. For the unit disk $\mathbb{D}$, the *Bergman space* $A^p(\mathbb{D})$ is defined by

$$A^p(\mathbb{D}) = \left\{ f \in H(\mathbb{D}) : \int_{\mathbb{D}} |f(z)|^p \, dA(z) < \infty \right\},$$

where dA denotes the normalized Lebesgue area measure. Bergman spaces provide a natural setting for studying analytic function theory through the lens of functional and operator analysis. They are closely related to Hardy spaces but emphasize area-based rather than boundary behavior. The Bergman kernel and the associated Bergman projection play important roles in analytic function theory and operator theory making these spaces a vital tool in modern analysis. In this talk, we will see an introduction to the Bergman spaces along with many interesting fundamental results on them. Also we will discuss the properties of multiplication operators and composition operators on these spaces.