Extension of Differential Forms on Arithmetic Quotients of Hermitean Symmetric Spaces*
– Abstract –

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Let D be a hermitean symmetric space of noncompact type, hence isomorphic to a bounded symmetric domain. Let a discontinuous group Γ act on D, and let Γ be arithmetically defined. Let X_Γ be the BAILY-BOREL compactification of D/Γ and X, a desingularization of X_Γ. Let $A[\Gamma, \wedge^p]$ be the space of Γ-automorphic forms for the natural automorphy factor that belongs to the p-forms and $\Omega^p(D)^\Gamma$, the space of Γ-invariant p-forms on D.

Then we have inclusions

$$\Omega^p(X) \hookrightarrow A[\Gamma, \wedge^p] \hookrightarrow \Omega^p(D)^\Gamma.$$

The equality at the second arrow is the question of KOECHER's principle. The equality at the first arrow is the main result of this paper: Every Γ-automorphic p-form on D of degree $p < \dim D$ extends to X.

The analogous result for $p = \dim D$ is false; here only the cusp forms extend [1]. The special case where D is SIEGEL's half-space and Γ is commensurable with SIEGEL's modular group was treated in [2].

References

[1] Y.-S. Tai in: A. Ash, D. Mumford, M. Rapaport, Y.-S. Tai, *Smooth Compacitification of Locally Symmetric Varieties* Brookline 1975.

[2] E. Freitag, K. Pommerening; Reguläre Differentialformen des Körpers der Siegelschen Modulfunktionen, J. reine angew. Math 331 (1982), 207–220.

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