On Limit Multiplicities for Spaces of Automorphic Forms

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Abstract. Let $\Gamma$ be a rank-one arithmetic subgroup of a semisimple Lie group $G$. For fixed $K$-Type, the spectral side of the Selberg trace formula defines a distribution on the space of infinitesimal characters of $G$, whose discrete part encodes the dimensions of the spaces of square-integrable $\Gamma$-automorphic forms. It is shown that this distribution converges to the Plancherel measure of $G$ when $\Gamma$ shrinks to the trivial group in a certain restricted way. The analogous assertion for cocompact lattices $\Gamma$ follows from results of DeGeorge-Wallach and Delorme.