Spectral square means of period integrals for automorphic forms on symmetric spaces

by **Masao Tsuzuki** (Sophia University)

Let Γ be a lattice in a semisimple Lie group G of non-compact type, and K a maximal compact subgroup of G. A Γ-invariant joint-eigenfunction by invariant differential operators on the Riemannian symmetric space G/K is called a wave function on Γ. Consider a symmetric subgroup H of G such that $\Gamma \cap H$ is a lattice of H and $H \cap K$ is a maximal compact subgroup of H. Then the 'H-period'of a wave function f on Γ is defined by the integral $\int_{\Gamma \cap H \backslash H} f(h)\, dh$. For several examples, we study the asymptotic behavior of the norm square me an $\sum_{\lambda < T} \left| \int_{\Gamma \cap H \backslash H} f_\lambda(h)\, , dh \right|^2$ of wave functions f_λ on Γ with the Laplace eigenvalue λ less than T as $T \to \infty$.