

ON THE UNREASONABLE EFFECTIVENESS OF GUTZMER'S  
FORMULA

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**Abstract**

In this expository talk we plan to demonstrate the usefulness of “Gutzmer’s formula” in the study of various problems related to the Segal-Bargmann transform. Gutzmer’s formula has been known in several contexts: compact Lie groups, compact and noncompact Riemannian symmetric spaces, Heisenberg groups and Hermite expansions. We apply Gutzmer’s formula to study holomorphic Sobolev spaces, local Peter-Weyl theorems, Paley-Wiener theorems and Poisson semi-groups.