

BORCHERDS PRODUCTS FOR UNITARY GROUPS

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ABSTRACT. In my talk I would like to report on the results of my thesis project and some follow-up research as a postdoc, concerning the multiplicative Borchers lift for indefinite unitary groups $U(1, n)$. Borchers' lifting originally takes weakly holomorphic modular forms transforming under a Weil-representation of the elliptic modular group (or a double cover thereof) to automorphic forms for orthogonal groups $O(2, q)$. I was able to transfer this result to unitary groups through a suitable embedding of $U(1, n)$ into $O(2, 2n)$. As with Borchers' result, the automorphic forms thus obtained can be expanded as Borchers products, they are meromorphic with their zeros and poles lying along certain arithmetic divisors, called Heegner divisors. A corollary of this main result is a modularity statement for divisors along the lines of Borchers' generalization of the Gross-Zagier-Kohnen theorem. For examples of Borchers products in my talk I will focus on the case of $U(1, 1)$, which is of some interest in its own right, as $U(1, 1)$ is isomorphic to $SL(2)$.