

On the quotient of function spaces on a topological group

For a topological group G , we consider the space $LUC(G)$ of right uniformly continuous functions on G with the supremum norm, together with the subspace $UC(G)$ of uniformly continuous functions and the subspace $WAP(G)$ of weakly almost periodic functions.

When G is a SIN group (i.e, the left and the right uniformities on G coincide), it is obvious that the quotient space $LUC(G)/UC(G)$ is trivial. We prove that if a locally compact group G is not SIN, then $LUC(G)/UC(G)$ is very large. (Joint work with Pekka Salmi.)

It is also known that $LUC(G)/WAP(G)$ is trivial when G is precompact. We prove that if G is not precompact, then $LUC(G)/WAP(G)$ is very large. (Joint work with Ahmed Bouziad.)