Space of completely bounded L^p multipliers and its pre-dual

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Abstract: Let G be a locally compact group. G. Pisier considered the operator space structure (oss) on $L^p(G)$ by developing operator space complex interpolation. In this oss one can define completely bounded $L^p(G)$ multipliers. It is natural to ask whether the space of completely bounded multipliers on $L^p(G)$ denoted by $M_p^{cb}(G)$ is strictly contained inside $M_p(G)$, the space of multipliers on $L^p(G)$. For $p = 1$ and 2 it can be shown that these two spaces coincide. A. Harcharras showed that for $1 < p < 2$ containment is strict in case of compact abelian group. In this talk we will see that $M_p^{cb}(G) \subsetneq M_p(G)$ for any infinite locally compact abelian group G. In the process one can also get the cb version of multiplier homomorphism theorem.

It is well known that pre-dual of $M_p(G)$ can be identified with Figá-Talamanca-Herz algebra $A_p(G)$. We will address the question of pre-dual of $M_p^{cb}(G)$. This is a joint work with S. Dutta.