

Local multipliers from a local point of view

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Let A be a C^* -algebra and let \mathcal{F} be the filter of essential closed ideals of A . If $I \subseteq J$ are closed essential ideals, there is an injective restriction map $M(J) \rightarrow M(I)$. The *local multiplier algebra* of A is

$$M_{\text{loc}}(A) := \varinjlim_{I \in \mathcal{F}} M(I),$$

see [1]. Pedersen posed the question of whether $M_{\text{loc}}(M_{\text{loc}}(A)) = M_{\text{loc}}(A)$. We will survey negative answers to this question obtained recently in [2] and [3]. The stabilization of $C([0, 1])$ is a counterexample. The second multiplier algebra $M_{\text{loc}}(M_{\text{loc}}(A))$ has better stability properties than $M_{\text{loc}}(A)$, in view of the result of Somerset [4] stating that $M_{\text{loc}}(M_{\text{loc}}(A))$ is its own local multiplier algebra and has only inner derivations in case A is a separable C^* -algebra such that $\text{Prim}(A)$ has a dense G_δ consisting of closed points.

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