Publ. Math. Debrecen
105/3-4 (2024), 403–415
DOI: 10.5486/PMD.2024.9794

Characterizations of centrality in C^*-algebras via local convexity of functions

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Abstract. In this paper, we give a characterization of central elements in a C^*-algebra $\mathcal{A}$ in terms of a local property of maps on $\mathcal{A}$ given by the functional calculus. We prove that if f denotes one of the functions $x \mapsto \exp(x)$, $x \mapsto x^3$ $(x \in \mathbb{R})$, a self-adjoint element $a \in \mathcal{A}$, which is also positive in the case where f is the latter map, is central if and only if f is locally convex at a.

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Mathematics Subject Classification: Primary: 46L05; Secondary: 15A16.
Key words and phrases: C^*-algebras, centrality, continuous functional calculus, convexity.