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Peripheral additivity and isomorphisms between semisimple

We give sufficient conditions for mappings between semisimple commutative Banach algebras, not necessarily linear, to be algebra isomorphisms. Namely, if A and B are semisimple commutative Banach algebras, then a mapping $T\colon A \to B$ is *peripherally-additive* if $\sigma_\pi(Tf + Tg) = \sigma_\pi(f + g)$ for all $f, g \in A$, where $\sigma_\pi(f)$ is the peripheral spectrum of f.

It is shown that under natural conditions every such mapping T is an isometric algebra isomorphism from A onto B that preserves the spectral radii, and therefore is linear and multiplicative. It is shown that similar result holds also for symmetric semisimple commutative Banach algebras.