Centrally stable algebras

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Motivated by Vesterstrøm's characterization of unital weakly central C^*-algebras via the centre-quotient property, we introduce the class of *centrally stable algebras*, as algebras A with the property that for any algebra epimorphism $\phi : A \to B$, the centre $Z(B)$ of B is equal to $\phi(Z(A))$, the image of the centre of A.

After providing some examples and basic observations, we establish our main result which states that a finite-dimensional unital algebra A over a perfect field $\mathbb{F}$ is centrally stable if and only if and only if

$$A \cong (C_1 \otimes_{\mathbb{F}_1} A_1) \times \cdots \times (C_r \otimes_{\mathbb{F}_r} A_r),$$

where each $\mathbb{F}_i$ is a finite field extension of $\mathbb{F}$, C_i is a commutative $\mathbb{F}_i$-algebra, and A_i is a central simple $\mathbb{F}_i$-algebra.

This is joint work with Matej Brešar (University of Ljubljana and University of Maribor).