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Homological dimensions of subalgebras

This is joint work with Colin Ingalls. Let $A$ be a finite dimensional algebra over an algebraically closed field. Fix $e$ a primitive idempotent of $A$ and let $\Gamma$ be the subalgebra $(1-e)A(1-e)$. Finally, let $S$ be the simple $A$-module at $e$. In this talk, we study the relationship between $\text{gl.dim.} A$, $\text{gl.dim.} \Gamma$ and the higher self-extensions of $S$. We will present a conjecture that relates all these concepts.