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Real rank zero for purely infinite corona algebras

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Theorem. *If B is a nonunital simple separable C*-algebra with strict comparison, almost divisibility, stable rank one and quasicontinuous scale, then the corona algebra $M(B)/B$ has real rank zero.*

The above generalizes various results in the literature, with connections to generalizations of the classical Weyl–von Neumann theorems, extension theory and other phenomena. The above utilizes the following (earlier) result:

Theorem. *Let B be a nonunital simple separable C*-algebra with strict comparison, almost divisibility and stable rank one. Then the following are equivalent*:

(1) *B has quasicontinuous scale*

(2) *$M(B)$ has strict comparison*

(3) *$M(B)/B$ is purely infinite*

(4) *$M(B)/I_{\min}$ is purely infinite*

(5) *$M(B)$ has finitely many ideals*

(6) $I_{\min} = I_{\text{fin}}$

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