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On the representation dimension of artin algebras

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The representation dimension of an artin algebra as introduced by M.Auslander in his Queen Mary Notes is the minimal possible global dimension of the endomorphism ring of a generator-cogenerator. The paper is based on two texts written in 2008 in connection with a workshop at Bielefeld. The first part presents a full proof that any torsionless-finite artin algebra has representation dimension at most 3, and provides a long list of classes of algebras which are torsionless-finite. In the second part we show that the representation dimension is adjusted very well to forming tensor products of algebras. In this way one obtains a wealth of examples of artin algebras with large representation dimension. In particular, we show: The tensor product of n representation-infinite path algebras of bipartite quivers has representation dimension precisely n+2.

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