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Copure injective resolutions, flat resolvents and dimensions

Abstract: In this paper, we show the existence of copure injective preenvelopes over noetherian rings and copure flat preenvelopes over commutative artinian rings. We use this to characterize n-Gorenstein rings. As a consequence, if the full subcategory of strongly copure injective (respectively flat) modules over a left and right noetherian ring R has cokernels (respectively kernels), then R is 2-Gorenstein.

Keywords: preenvelopes, copure injective, copure flat, n-Gorenstein, resolutions
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