

A Note on Homological Dimensions of Artinian Local Cohomology Modules

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Abstract. Let (R, \mathfrak{m}) be a non-zero commutative Noetherian local ring (with identity), M be a non-zero finitely generated R -module. In this paper for any $\mathfrak{p} \in \text{Spec}(R)$ we show that $\text{injdim}_{R_{\mathfrak{p}}} H_{\mathfrak{p}R_{\mathfrak{p}}}^{i-\dim(R/\mathfrak{p})}(M_{\mathfrak{p}})$ and $\text{fd}_{R_{\mathfrak{p}}} H_{\mathfrak{p}R_{\mathfrak{p}}}^{i-\dim(R/\mathfrak{p})}(M_{\mathfrak{p}})$ are bounded from above by $\text{injdim}_R H_{\mathfrak{m}}^i(M)$ and $\text{fd}_R H_{\mathfrak{m}}^i(M)$ respectively, for all integers $i \geq \dim(R/\mathfrak{p})$.