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James Gossell* (jgossel@clemson.edu). *Gorenstein Injective Modules under Flat Base Change*. Preliminary report.

For $A \rightarrow B$ a flat homomorphism of commutative noetherian rings and M an injective A -module, we can calculate the injective dimension of $M \otimes_A B$ as a B -module by calculating the injective dimensions of the fibers $F(\mathfrak{p}) = B_{\mathfrak{p}}/\mathfrak{p}B_{\mathfrak{p}}$ for each $\mathfrak{p} \in \text{Ass}(M)$ by the formula $\text{id}_B(M \otimes_A B) = \sup_{\mathfrak{p} \in \text{Ass}(M)} \text{id}_{F(\mathfrak{p})} F(\mathfrak{p})$ (Foxby, 1975). This formula can be used to recover the fact that injective modules remain injective under certain flat base changes, such as a localization. We work towards a generalization of Foxby's Theorem to calculate the Gorenstein injective dimension of the base change of a Gorenstein injective module. (Received January 25, 2019)