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Non-singular precovers over polynomial rings

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Abstract: One of the results in my previous paper On torsionfree classes which are not precover classes, preprint, Corollary 3, states that for every hereditary torsion theory τ for the category $R\text{-mod}$ with $\tau \geq \sigma$, σ being Goldie's torsion theory, the class of all τ -torsionfree modules forms a (pre)cover class if and only if τ is of finite type. The purpose of this note is to show that all members of the countable set $\mathfrak{M} = \{R, R/\sigma(R), R[x_1, \dots, x_n], R[x_1, \dots, x_n]/\sigma(R[x_1, \dots, x_n]), n < \omega\}$ of rings have the property that the class of all non-singular left modules forms a (pre)cover class if and only if this holds for an arbitrary member of this set.

Keywords: hereditary torsion theory, torsion theory of finite type, Goldie's torsion theory, non-singular module, non-singular ring, precover class, cover class

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