McCoy and strongly McCoy rings

(The talk is based on my joint work with J. Matczuk)

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A right R-module M_R over a ring R is McCoy if for any $f(x) \in M[x]$, $ann_R(f(x)) \neq 0$ whenever $ann_{R[x]} f(x) \neq 0$. A ring R is right McCoy if R_R is McCoy. A ring is right strongly McCoy if every right R-module is McCoy. In [2] it was shown that a commutative ring is always McCoy. In [1] V. Camillo and P. Nielsen studied the relations between McCoy rings and other kind of rings such as Armendariz, semi-commutative, reduced,...In particular, they showed that a reversible ring ($ab = 0 \Rightarrow ba = 0$) is always McCoy. The talk will start with a short elementary proof of this result. We will then present classes of modules having the McCoy property. Some classes of strongly McCoy rings will be identified. In particular, the domains which are right strongly McCoy will be characterized as the right Ore domains. We will end the talk by giving some classes of rings for which the properties of being McCoy and strongly McCoy coincide. This is the case for quasi-Frobenius rings.

[1] Camillo, V., Nielsen, P.P., McCoy rings and zero-divisors *Journal of Pure and Applied Algebra* 212 (2008), 599-615.

[2] McCoy, N.H., Remarks on divisors of zero, *Amer. Math. Monthly* 49 (1942), 286-295.