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Lars Winter Christensen, David A. Jorgensen, Hamid Rahmati, Janet Striuli and Roger A. Wiegand* (rwiegand@math.unl.edu), Department of Mathematics, University of Nebraska, Lincoln, NE 68588-0130. *The second Brauer-Thrall conjecture for totally reflexive modules.* Preliminary report.

Abstract: Let (R, \mathfrak{m}, k) be a local ring which is not Gorenstein, and assume that R possesses a non-free totally reflexive module. (By definition, this is a finitely generated reflexive R -module such that $\text{Ext}_R^i(M \oplus M^*, R) = 0$ for every $i > 0$.) It is known that then R has an infinite family of pairwise non-isomorphic indecomposable totally reflexive modules. Now assume that k is infinite. The Second Brauer-Thrall Conjecture, in this context, predicts that there are infinitely many integers n for which there are $|k|$ pairwise non-isomorphic indecomposable totally reflexive R -modules requiring n generators. We verify this conjecture in several situations. (Received February 23, 2010)