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**Lars Winther Christensen\*** (lars.w.christensen@ttu.edu), **Srikanth B. Iyengar** and **Thomas Marley**. *Rigidity of Ext and Tor with coefficients in residue fields of a commutative noetherian ring*. Preliminary report.

For a finitely generated module  $M$  over a commutative noetherian local ring  $(R, \mathfrak{m}, k)$ , vanishing of  $\mathrm{Tor}_{n+1}^R(k, M)$  for some  $n \geq 0$  implies vanishing of  $\mathrm{Tor}_i^R(k, M)$  for all  $i \geq n + 1$ ; this phenomenon is known as *rigidity*, and here it is a consequence of the existence of minimal free resolutions.

We prove that for any module  $M$  over a commutative noetherian ring  $R$ , and for any prime ideal  $\mathfrak{p}$  in  $R$ , vanishing of  $\mathrm{Tor}_{n+1}^R(R_{\mathfrak{p}}/\mathfrak{p}R_{\mathfrak{p}}, M)$  for some  $n \geq \dim R_{\mathfrak{p}}$  implies vanishing of  $\mathrm{Tor}_i^R(R_{\mathfrak{p}}/\mathfrak{p}R_{\mathfrak{p}}, M)$  for all  $i \geq n + 1$ . A similar result holds for vanishing of  $\mathrm{Ext}$ , and these results allow us to improve existing characterizations of modules of finite homological dimensions. (Received September 13, 2016)