1086-13-1668   **Olgur Celikbas*** (`celikbas0@missouri.edu`), Mathematics Department, 323 Mathematical Sciences Bldg., University of Missouri-Columbia, Columbia, MO 65211, and **Srikanth Iyengar** (`s.b.iyengar@unl.edu`), **Greg Piepmeyer** (`ggpz95@mail.missouri.edu`) and **Roger Wiegand** (`rwiegand@unl.edu`). *An application to the vanishing of $\eta(-,-)$ pairing.* Preliminary report.

Let R be a commutative Noetherian local complete intersection ring of codimension c, and let M and N be nonzero finitely generated R-modules such that $\mathrm{Tor}^R_{\gg 0}(M, N)$ has finite length. Assume $c \geq 2$ and that $\eta^R_c(M, N) = 0$ (Here $\eta(-, -)$ is a generalized version of Hochster's $\theta(-, -)$ pairing, initially defined and studied by Hailong Dao.) We give various criteria, in terms of the depth properties of M, N, and $M \otimes_R N$, that force the vanishing of $\mathrm{Tor}^R_{>0}(M, N)$. Applying our result to a class of complete intersections over which $\eta(-, -) = 0$, we obtain a new connection between the torsion in the tensor product of modules and the vanishing of Tor. (Received September 24, 2012)

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