

1062-13-247

W. Frank Moore* (frankmoore@math.cornell.edu), 310 Malott Hall, Cornell University, Ithaca, NY 14853-4201, **Sandra Spiroff** (spiroff@olemiss.edu), Department of Mathematics, University of Mississippi, University, MS 38677, and **Mark E. Walker** (mwalker5@math.unl.edu), Department of Mathematics, University of Nebraska - Lincoln, Lincoln, NE 68588. *On an invariant of graded isolated complete intersection singularities.* Preliminary report.

Let R be an isolated hypersurface singularity, and let M and N be finitely generated R -modules. As R is a hypersurface, the torsion modules of M against N are eventually periodic of period two (i.e., $\text{Tor}_i^R(M, N) \cong \text{Tor}_{i+2}^R(M, N)$ for $i \gg 0$). Since R has only an isolated singularity, these torsion modules are of finite length for $i \gg 0$. The theta invariant of the pair (M, N) is defined by Hochster to be $\ell(\text{Tor}_{2i}^R(M, N)) - \ell(\text{Tor}_{2i+1}^R(M, N))$ for $i \gg 0$. This pairing has been recently studied by Dao and Moore-Piepmeyer-Spiroff-Walker.

Dao also defined and studied a related pairing $\eta_c(M, N)$ for modules over an isolated complete intersection singularity of codimension c . In this work, we extend the methods used by Moore-Piepmeyer-Spiroff-Walker to study η_c , and show that in this case η_c is the zero pairing provided $c \geq 2$. We also discuss another pairing related to η_c defined in terms of the geometry of R . (Received August 10, 2010)