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Liana M Segal* (segal@umkc.edu) and **Melissa Menning**. *Cohomology of finite modules over short Gorenstein rings.*

Let R be a Gorenstein local ring with maximal ideal \mathfrak{m} satisfying $\mathfrak{m}^3 = 0$. Set $k = R/\mathfrak{m}$ and $e = \text{rank}_k(\mathfrak{m}/\mathfrak{m}^2)$. If $e > 2$ and M, N are finitely generated R -modules, we show that the formal power series

$$\sum_{i=0}^{\infty} \text{rank}_k(\text{Ext}_R^i(M, N) \otimes_R k) t^i \quad \text{and} \quad \sum_{i=0}^{\infty} \text{rank}_k(\text{Tor}_i^R(M, N) \otimes_R k) t^i$$

are rational, with denominator $1 - et + t^2$. (Received September 22, 2015)