1024-13-185   **Ian M Aberbach*** (`aberbach@math.missouri.edu`), Department of Mathematics, University of Missouri, Columbia, MO 65211, and **Florian Enescu**, Department of Mathematics, Georgia State University, Atlanta, GA. *Rings with small Hilbert-Kunz multiplicity.* Preliminary report.

Let (R, m) be a local Noetherian ring of positive prime characteristic. The Hilbert-Kunz multiplicity of R, $e_{HK}(R)$, is a subtle invariant, which often contains more information than the usual multiplicity of R. If R is formally unmixed then the Hilbert-Kunz multiplicity is 1 if and only if R is regular. For a fixed dimension d, it is an open question as to whether or not there is a lower bound for the Hilbert-Kunz multiplities of non-regular rings. We show that for non-Gorenstein rings, $e_{HK}(R) \geq e/(e-1)$, where e is the multiplicity of R. We also explore several methods for getting lower bounds for $e_{HK}(R)$ (which, in particular, can be applied in the Gorenstein case). (Received January 08, 2007)

1