1009-13-65 **Andrew R. Kustin*** (kustin@math.sc.edu), Mathematics Department, University of South carolina, Columbia, SC 29208, and **Adela Vraciu**. *Socle degrees and the Frobenious homomorphism.* Preliminary report.

Let k be a field of positive characteristic p, R be a positively graded algebra over k, and $\mathfrak{m}$ the irrelevant maximal ideal of R. For each $\mathfrak{m}$-primary homogeneous ideal J of R, we compare the degrees of the generators $\{d_i\}$ of the socle of R/J to the degrees of the generators $\{D_i\}$ of the socle of $R/J^{[p]}$, where $J^{[p]}$ is the p^{th} Frobenious power of J. If R/J has finite projective dimension over R, then $D_i = pd_i - (p-1)a$, for all i, where a is the a-invariant of the ring R. We are interested in establishing the converse, and have had our most success when R is a hypersurface ring. We use the Avramov-Miller characterization of modules of finite projective dimension over complete intersections in positive characteristic. (Received August 03, 2005)