1051-13-144 **Stefan O. Tohaneanu*** (stefan.tohaneanu@uc.edu), Department of Mathematical Sciences, University of Cincinnati, Cincinnati, OH 45221. *The minimal distance of evaluation codes.*

Evaluation codes are the projective version of the Reed-Muller codes: consider Γ a set of n points in $\mathbb{P}^m$ and "evaluate" the homogeneous polynomials of degree a at the points of Γ. The geometry of Γ determine the behavior of the minimal distance of these codes. Using the Cayley-Bacharch Theorem Gold-Little-Schenck find a lower bound for the minimal distance, when Γ is a complete intersection. They generalized to $\mathbb{P}^m$ the result of Hansen for complete intersections in $\mathbb{P}^2$. We extended their result to the case when Γ is Gorenstein. In addition, from the shifts in the graded minimal free resolution of the ideal of Γ, we found a similar lower bound for the minimal distance of the evaluation code, for any set of points in $\mathbb{P}^3$. We present all of these results, as well as other interesting lower bounds for the minimal distance (e.g., Ballico-Fontanari lower bound). (Received August 22, 2009)