1038-13-180   **Fabrizio Zanello*** (`zanello@math.kth.se`), Department of Mathematical Sciences, Michigan Technological University, 1400 Townsend Drive, Houghton, MI 49931-1295. *Interval Conjectures for level Hilbert functions.*

The theory of Gorenstein and level (graded) algebras is an important topic of commutative algebra, because of both its intrinsic interest and the applications it has to several other fields - such as algebraic combinatorics, algebraic geometry, invariant theory, and even complexity theory.

One fundamental invariant of graded algebras is the Hilbert function, which counts the dimension of such algebras in each degree. The goal of this talk is to present and discuss two conjectures I have recently formulated: The "Interval Conjecture" (IC) and the "Gorenstein Interval Conjecture" (GIC).

These conjectures have been inspired by the research performed in this area over the last few years. In particular, a series of recent results seems to indicate that it is nearly impossible to characterize explicitly the sets of all level or of all Gorenstein Hilbert functions. Therefore, the purpose of the IC and the GIC is to at least show the existence of a very strong - and natural - form of "regularity" in the structure of such important and complicated sets. Even if I have already proved them in a few particular cases, today we still seem very far from showing my conjectures in full generality. (Received February 08, 2008)