1176-13-341 **John Myers*** (john.myers@oswego.edu). *Finer structures on homotopy Lie algebras.* Preliminary report.

Let R be a standard graded commutative algebra over a field k. Via a certain homological procedure, one may produce from R a graded Lie k-algebra denoted $\pi(R)$ and called the *homotopy Lie algebra*. Provided that k has a linear graded free resolution over R (i.e., provided R is a *Koszul* algebra), the Lie algebra $\pi(R)$ is a complete invariant of R, in the sense that there is no more information in R that is not encoded in its homotopy Lie algebra. This is a classical version of Koszul duality.

But what if k does *not* have a linear graded free resolution — is the Lie structure on $\pi(R)$ still a complete invariant? In general, the answer is *no*, but we will show in this talk that the Lie structure may be "homotopically enriched" to yield an L_∞-*algebra structure* on $\pi(R)$ which is a complete invariant. We will indicate how this finer structure may be obtained via a general transfer theorem applicable in arbitrary characteristic, the latter having implications beyond commutative ring theory. (Received January 25, 2022)