1135-13-2688 **Mark N. Blumstein*** (blumstei@math.colostate.edu), 841 Oval Dr., Fort Collins, CO 80523.
Commutative Algebra in the Graded Category with an Application to Equivariant Cohomology Rings.

The *Degree* of a graded R-module M is defined as $\lim_{t\to 1}(1-t)^{dim(M)}PS_M(t)$, where $PS_M(t)$ is the Hilbert-Poincare series of the module, and *dim* is Krull dimension. It turns out that this number has a decomposition from commutative algebra as follows: $\deg(M) = \sum_{P\in\mathcal{D}(\mathcal{M})} \ell_R(M)deg(R/P)$, where $\mathcal{D}(M)$ is the set of minimal primes of M which have maximal dimension.

The main result of this talk gives a re-interpretation of the sum formula above for equivariant cohomology rings. In this setting, G is a compact Lie group acting on a nice enough topological space X, and cohomology coefficients are taken in $\mathbb{Z}/p$. The main result is:

$$\deg(H^*_G(X)) = \sum_{[A,c]\in\mathcal{B}_{max}(G,X)} \frac{1}{|W_G(A,c)|}\deg(H^*_{C_G(A,c)}(c)),$$

where A is an elementary abelian p-group of maximal rank, c is a component of X^A (the fixed point set,) and $C_G(A,c)$, $W_G(A,c)$ refer to the centralizer and Weyl group respectively of A in G.

This work is in the spirit of Daniel Quillen's series of Annals papers from 1972, *The Spectrum of an Equivariant Cohomology Ring I and II.* An example from the cohomology of groups for an extra special 5-group will be presented. (Received September 26, 2017)