1123-16-163 **Colin Ingalls** and **Charles Paquette***, charles.paquette@uconn.edu. *Global dimensions of idempotent subalgebras.* Preliminary report.

Consider a finite dimensional algebra A over a field and e an idempotent of A. Consider the algebra $\Gamma = (1-e)A(1-e)$. In general, A and Γ are very different from the homological point of view. One general goal is to find an A-module S_e that controls the relationship between the global dimensions of A and Γ. The semi-simple A-module $S_e = eA/e\text{rad}A$ is a good candidate for this. For e primitive, consider the following three conditions: (1) $\text{gl.dim}A < \infty$; (2) $\text{gl.dim}\Gamma < \infty$; (3) $\text{Ext}^i_A(S_e, S_e) = 0$ for all $i > 0$. In a past project, we proved that any two of these conditions imply the third. If e is not primitive, then condition (3) needs to be replaced by another closely related condition (3'). In this talk, I will explain how (3') allows us to relate the global dimensions of A and Γ. I will also explain how to use this to get a reduction formula for the Cartan Determinant Conjecture. This is joint work with Colin Ingalls. (Received August 24, 2016)