SUNIL CHEBOLU A, University of Western Ontario

A new perspective on groups with periodic cohomology

Groups with periodic cohomology play an important role in both topology and representation theory. For instance, a classical result in topology due to Swan (1960) states that the cohomology of BG is periodic if and only if G acts freely on a finite CW complex with the homotopy type of a sphere. In this talk I will present a new perspective on these groups using Tate cohomology and projective classes. I will show that groups G with period group cohomology are characterised by the property that for all finite-dimensional G-representations M, the Tate cohomology $\widehat{H}^*(G, M)$ is finitely generated over $\widehat{H}^*(G, k)$. Some related results on the finite generation of Tate cohomology will also be discussed if time permits.

This is joint work with Jon Carlson and and Jan Minac.