On endotrivial complexes and the generalized Dade group

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Abstract: Endotrivial chain complexes may be considered a chain complex-theoretic analogue of endotrivial modules, a class of modules of interest to group and representation theorists. They are the invertible objects in the tensor-triangulated category $K^b({}_{kG}\mathbf{triv})$, the homotopy category of p-permutation kG-modules. Moreover, these complexes induce splendid autoequivalences, providing a connection to Broue's abelian defect group conjecture. In this talk, we will introduce these complexes and describe how to classify them completely. We do so by highlighting a surprising connection with the Dade group of a finite group, which parameterizes capped endopermutation modules.