1108-16-457 **Marcelo Aguiar** (maguiar@math.cornell.edu) and **Aaron Lauve*** (lauve@math.luc.edu), Department of Mathematics and Statistics, Loyola University Chicago, 1032 W Sheridan Road, Chicago, IL 60660. *The characteristic polynomial of the antipode for combinatorial Hopf algebras.*

The Adams operators Ψ_n on a Hopf algebra H are the convolution powers of the identity of H. The antipode of H is the special case $n = -1$. We study the Adams operators when H is graded connected. The main result is a complete description of the characteristic polynomial—both eigenvalues and their multiplicities—for the action of the operator Ψ_n on each homogeneous component of H. The eigenvalues are powers of n. The multiplicities are independent of n, and in fact only depend on the dimension sequence of H. We look at some combinatorial consequences of this result, and, time permitting, indicate extensions to Hopf monoids in species, q-Hopf algebras, and cofree graded connected Hopf algebras. (Received January 19, 2015)