1017-57-34 **Radmila Sazdanovic*** (radmila@gwu.edu), 1922 F Street, NW, Washington, DC 20052, and **Milena D. Pabiniak** (pabiniak@gwu.edu) and **Jozef H. Przytycki** (przytyck@gwu.edu).

Discovering torsion in chromatic graph homology.

We obtain unexpected torsion in chromatic graph homology. Using Mathematica package and Pari we can calculate $TorH_{A_m}^{1,(v-1)(m-1)-(m-2)(n-1)/2}(G)$ for an arbitrary simple graph with v vertices, any $n \geq 3$ and algebras of truncated polynomials A_m. After analyzing different series of graphs, including infinite families of basic polyhedra we formulate the following conjectures:

1. For any prime p there is a simple graph G such that: $Z_p \subset TorH_{A_3}^{1,2v-3}(G)$
   where v denotes number of vertices in G.

2. For any wheel, that is a cone over the polygon P_n, $n \geq 4$:
   $H_{A_3}^{1,2n-1}(cone(P_n)) = Z_3^n \oplus Z_2 \oplus Z^n$ if n is odd, and $Z_3^{n-1} \oplus Z^{n+1}$ if n even.
   This is checked for cones up to 20 crossings.

3. For any complete graph with n vertices K_n, $n \geq 4$ the following holds:
   $H_{A_3}^{1,7}(K_n) = Z_3^{n-1} \oplus Z_2 \oplus Z^{n(n-1)(2n-7)/6}$.
   This is checked for complete graphs up to 25 crossings.

We expect that if a simple graph G contains a triangle then $TorH_{A_3}^{1,2v-3}(G)$ contains Z_3.
However, we found a counterexample that the opposite does not hold - the 1-skeleton of the Klein bottle composed of 25 squares. (Received January 31, 2006)