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Jozef H Przytycki* (przytyck@gwu.edu), George Washington University, Washington, DC 20052, and **Milena D Pabiniak** and **Radmila Sazdanovic**. *Combinatorial patterns in Khovanov type graph homology.*

The algebra of truncated polynomials $A_m = Z[x]/(x^m)$ plays an important role in the theory of Khovanov and Khovanov-Rozansky homology of links. It is not difficult to compute Hochschild homology of A_m and the only torsion, equal to Z_m , appears in grading $(i, \frac{m(i+1)}{2})$ for any odd i . We have demonstrated that Hochschild homology is closely related to Khovanov homology via comultiplication free graph homology. We analyze here grading of graph homology which is producing torsion for a polygon. We find completely the homology $H_{A_2}^{1,v-1}(G)$ and $H_{A_3}^{1,2v-3}(G)$. The group $H_{A_3}^{1,2v-3}(G)$ can be computed from homology of cell complexes with the 1-skeleton G : $X_{3,4}(G)$ is obtained from G by adding 2-cells along 3-cycles and 4-cycles of G , and $X_{(3),4}(G)$ is obtained from G by adding 2-cells along 4-cycles of G and by identifying edges of every 3-cycle in G . In particular, we prove that A_3 homology can have any torsion. The result about $H_{A_2}^{1,v-1}(G)$ gives as a corollary a fact about Khovanov homology of alternating and + adequate link diagrams. (Received February 22, 2006)