1009-05-147 **Michael S Chmutov*** (chmutov@mps.ohio-state.edu), 8853 Orinda Rd, Powell, OH 43065.

Ranks of Chromatic Graph Homologies. Preliminary report.

Recently Laure Heleme-Guizon and Yongwu Rong from George Washington University introduced a homology theory for graphs where the graded Euler characteristic is the chromatic polynomial of the graph. I will outline a theorem that allows us to find the ranks of the homology groups from the chromatic polynomial. The proof is modeled after a similar proof by Eun Soo Lee in Khovanov homology theory of knots. It is based on existence of a second differential Φ in the chain complex and standard tools from spectral sequence theory. An interesting difference between the two proofs is the computation of the 0-dimensional homologies of $\Phi + d$. If time permits, I will show how this theorem allows us to calculate ranks of 1-dimensional homologies of a general graph. (Received August 14, 2005)