

1023-05-1742

**John Shareshian** and **Michelle L. Wachs\*** ([wachs@math.miami.edu](mailto:wachs@math.miami.edu)), Department of Mathematics, University of Miami, Coral Gables, FL 33124. *The 1 mod  $k$  partition poset and graph connectivity*. Preliminary report.

The representation of the symmetric group on the homology of the partition lattice has been extensively studied in the literature and has arisen in many different contexts. It is well-known that this representation is isomorphic to the representation of the symmetric group on the homology of the simplicial complex of graphs that are not connected. We present a conjectured generalization of this result to the poset of partitions whose block sizes are congruent to 1 mod  $k$  and the simplicial complex of graphs that are not  $k$ -edge connected. We show that this conjecture is true for  $k = 2$ , as well as for  $k = 1$ . (Received September 26, 2006)