

1062-20-221

**Harald Ellers\*** ([hellers@allegheny.edu](mailto:hellers@allegheny.edu)), Dept. of Mathematics, Allegheny College, 520 North Main St., Meadville, PA , and **John Murray**, National University of Ireland, Maynooth, Ireland.  
*Representation theory of centralizer algebras, and degenerate affine Hecke algebras.* Preliminary report.

Let  $(R, K, k)$  be a  $p$ -modular system with  $k$  algebraically closed, and let  $S_n$  be the symmetric group of degree  $n$ . If  $l < n$ , identify  $S_l$  with a subgroup of  $S_n$ . The authors are engaged in a project whose long-term goal is to understand the representation theory of the centralizer algebra  $RS_n^{S_l} = \{a \in RS_n \mid ab = ba \text{ for all } b \in RS_l\}$ . We would like to find the simple  $kS_n^{S_l}$  modules and the blocks of  $kS_n^{S_l}$ . We would also like to find the decomposition matrices for the algebra  $RS_n^{S_l}$ , but this is a very difficult problem in general. The degenerate affine Hecke algebra  $\mathcal{H}_{n-l}^k$  plays an important role. When  $n - l$  is small enough that the formal characters of  $\mathcal{H}_{n-l}^k$  are known, then all the problems can be solved. We will discuss recent progress. (Received August 09, 2010)