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**Monica Lewis\*** ([lewi1714@umn.edu](mailto:lewi1714@umn.edu)), Minneapolis, MN. *Galois actions and finiteness properties of local cohomology in positive characteristic*. Preliminary report.

Let  $A$  be a regular local ring of prime characteristic  $p > 0$ . Let  $L$  be a finite Galois extension of the fraction field  $K$  of  $A$ , whose degree over  $K$  is not divisible by  $p$ . Let  $R$  be the integral closure of  $A$  in  $L$ , and suppose that  $R$  is Cohen-Macaulay (which, due to a result of Roberts, is automatic if the extension is abelian). What can be said about the finiteness properties of the local cohomology of  $R$ ? If  $G$  denotes the Galois group of  $L$  over  $K$ , and  $I$  is an ideal of  $R$ , then certain direct sums of local cohomology modules associated with (the  $k$ -fold sums of) the ideals  $\{gI\}_{g \in G}$  carry both a Galois action and a compatible Frobenius action. In this talk, we make use of this rich structure to investigate questions about support and associated primes. (Received September 20, 2021)