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Monica Lewis* (malewi@umich.edu). *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 \mathcal{L} be a finite Galois extension of the fraction field \mathcal{K} of A , whose degree over \mathcal{K} is not divisible by p . Let R be the integral closure of A in \mathcal{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 \mathcal{L} over \mathcal{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 14, 2020)