1160-13-139 **Monica Lewis*** (malewi@umich.edu). *The local cohomology of a parameter ideal with respect to an arbitrary ideal.*

Let R be a regular ring, let J be an ideal generated by a regular sequence of codimension at least 2, and let I be an ideal containing J. We give an example of a module $H^3_I(J)$ with infinitely many associated primes, answering a question of Hochster and Núñez-Betancourt in the negative. In fact, for $i \leq 4$, we show that under suitable hypotheses on R/J, $\operatorname{Ass} H^i_I(J)$ is finite if and only if $\operatorname{Ass} H^{i-1}_I(R/J)$ is finite. Our proof of this statement involves a novel generalization of an isomorphism of Hellus, which may be of some independent interest. The finiteness comparison between $\operatorname{Ass} H^i_I(J)$ and $\operatorname{Ass} H^{i-1}_I(R/J)$ tends to improve as our hypotheses on R/J become more restrictive. To illustrate the extreme end of this phenomenon, at least in the prime characteristic $p > 0$ setting, we show that if R/J is regular, then $\operatorname{Ass} H^i_I(J)$ is finite for all $i \geq 0$. (Received August 08, 2020)