1167-13-198 **Monica Lewis*** (malewi@umich.edu) and **Eric Canton**. *The Fedder action and a simplicial complex of local cohomologies.*

Let R be a regular ring of prime characteristic $p > 0$ and let $\underline{\mathbf{f}}$ be a permutable regular sequence of codimension c. We describe a complex of $R\langle F\rangle$-modules, denoted $\mathbb{\Delta}^{\bullet}_{\underline{\mathbf{f}}}(R)$, whose terms include $\mathbb{\Delta}^{0}_{\underline{\mathbf{f}}}(R) = R/\underline{\mathbf{f}}$, equipped with its natural Frobenius action, and $\mathbb{\Delta}^{c}_{\underline{\mathbf{f}}}(R) = H^{c}_{\underline{\mathbf{f}}}(R)$, equipped with a Frobenius action we refer to as the Fedder action. We show that $H^i(\mathbb{\Delta}^{\bullet}_{\underline{\mathbf{f}}}(R)) = 0$ for all $i < c$, and that $H^c(\mathbb{\Delta}^{\bullet}_{\underline{\mathbf{f}}}(R))$ is a copy of $H^{c}_{\underline{\mathbf{f}}}(R)$ equipped with the usual Frobenius action. Using the $\mathbb{\Delta}^{\bullet}_{\underline{\mathbf{f}}}(R)$ complex, we show that if I is an ideal containing $\underline{\mathbf{f}}$ such that $H^i_I(R) = 0$ for all $\mathrm{ht}(I) < i < \mathrm{ht}(I) + c$ (which is automatic if R/I is Cohen-Macaulay or if $c = 1$), then the module $H_I^{\mathrm{ht}(I/\underline{\mathbf{f}})+c}(R/\underline{\mathbf{f}})$ has Zariski closed support. (Received March 07, 2021)