1172-13-103   **James Lewis*** (`jl2826@cornell.edu`). *Hyperplane Arrangements and the Rational Powers of Monomial Ideals.* Preliminary report.

We discuss the rational powers of ideals. In the case of monomial ideals, a filtration of monomial ideals defined by hyperplane arrangements leads to a characterization of the rational powers of monomial ideals. This yields that symbolic powers of squarefree monomial ideals are indeed rational powers themselves. The hyperplane arrangement filtration refines the integral closure power filtration, a further connection between integral closures and geometry. Using the connection with symbolic powers techniques, we briefly discuss using splittings to show the convergence of depths and normalized Castelnuovo–Mumford regularities. Additionally, we discuss the finiteness of asymptotic associated primes, and we find that the normalized lengths of local cohomology modules converge for rational powers, and hence for symbolic powers of squarefree monomial ideals. (Received August 20, 2021)