1120-13-218 **Hailong Dao** and **Jonathan Montaño*** (jmontano@ku.edu). *Local cohomology of powers of ideals.* Preliminary report.

Let $(R, \mathfrak{m})$ be a commutative local ring of dimension d and I an R-ideal. The asymptotic behavior of the sequence $\{\lambda(\mathrm{H}^0_{\mathfrak{m}}(R/I^n))\}_{n\geqslant 0}$ has been studied by several authors. For example, Cutkosky proved that if R is analytically unramified the limit $\lim_{n\to\infty} \dfrac{\lambda(\mathrm{H}^0_{\mathfrak{m}}(R/I^n))}{n^d}$ exists for any I, this results in particular shows that the ε-multiplicity of Ulrich and Validashti exists as a limit. In this work, we focus on the sequence $\{\lambda(\mathrm{H}^i_{\mathfrak{m}}(R/I^n))\}_{n\geqslant 0}$ for $i > 0$. We are able to show that, for large n, this sequence coincides with a quasi-polynomial if I is a monomial ideal. Moreover, for square-free quadratic monomial ideals we show that the limit $\lim_{n\to\infty} \dfrac{\lambda(\mathrm{H}^i_{\mathfrak{m}}(R/I^n))}{n^d}$ exists. (Received February 22, 2016)