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Hailong Dao* (hdao@ku.edu) and **Jonathan Montaño** (jmontano@ku.edu). *Local cohomology of powers of ideals.*

Local cohomology was introduced by Grothendieck in early 1960s. Since then it has become an essential tool and active research topic in commutative algebra and algebraic geometry. While local cohomology modules contain many useful and subtle information, one fundamental obstacle in understanding them is that they are often not finitely generated. Let I be a graded ideal in a polynomial ring over a field. In this talk I will describe a recent work with Jonathan Montaño on estimating the asymptotic behavior of length of local cohomologies of powers of I . Two interesting technical ingredients were crucial: asymptotic “Kodaira type” vanishing results and counting functions for Presburger arithmetic. (Received July 15, 2017)