Li, Jiamin
Singularities of generic linkage via Frobenius powers. (English) Zbl 07757730
Proc. Am. Math. Soc. 152, No. 1, 53-61 (2024)

Summary: Let $I$ be an equidimensional ideal of a ring polynomial $R$ over $\mathbb{C}$ and let $J$ be its generic linkage. We prove that there is a uniform bound of the difference between the F-pure thresholds of $I$ and $J$ via the generalized Frobenius powers of ideals. This provides evidence that the F-pure threshold of an equidimensional ideal $I$ is less than that of its generic linkage. As a corollary we recover a result on log canonical thresholds of generic linkage by Niu.

MSC:
14B05 Singularities in algebraic geometry
13A35 Characteristic $p$ methods (Frobenius endomorphism) and reduction to characteristic $p$; tight closure

Full Text: DOI arXiv

References:
[1] Blickle, Manuel, Discreteness and rationality of $(F^r)$-thresholds, Michigan Math. J., 43-61 (2008) · Zbl 1177.13013 · doi:10.1307/mmj/1220879396
[2] Chardin, Marc, Liaison and Castelnuovo-Mumford regularity, Amer. J. Math., 1103-1124 (2002) · Zbl 1029.14016
[3] Huneke, Craig, The structure of linkage, Ann. of Math. (2), 277-334 (1987) · Zbl 0638.13003 · doi:10.2307/1971402
[4] Huneke, Craig, Algebraic linkage, Duke Math. J., 415-429 (1988) · Zbl 0656.13026 · doi:10.1215/S0012-7094-88-05618-9
[5] Lazarsfeld, Robert, Positivity in algebraic geometry. II, Ergebnisse der Mathematik und ihrer Grenzgebiete. 3. Folge, A Series of Modern Surveys in Mathematics [Results in Mathematics and Related Areas. 3rd Series. A Series of Modern Surveys in Mathematics], xviii+385 pp. (2004), Springer-Verlag, Berlin · Zbl 1093.14500 · doi:10.1007/978-3-642-18808-4
[6] Ma, Linquan, $(F^r)$-singularities under generic linkage, J. Algebra, 194-210 (2018) · Zbl 1445.13011 · doi:10.1016/j.jalgebra.2018.02.024
[7] Mustaţă, Mircea, Estimates for $(F^r)$-jumping numbers and bounds for Hartshorne-Speiser-Lyubeznik numbers, Nagoya Math. J., 133-160 (2013) · Zbl 1328.13007 · doi:10.1215/00277630-2077035
[8] Niu, Wenbo, Singularities of generic linkage of algebraic varieties, Amer. J. Math., 1655-1691 (2014) · Zbl 1312.14113 · doi:10.1353/ajm.2014.0040
[9] Hara, Nobuo, A generalization of tight closure and multiplier ideals, Trans. Amer. Math. Soc., 3143-3174 (2003) · Zbl 1028.13003 · doi:10.1090/S0002-9947-03-03285-9
[10] Hernández, Daniel J., Frobenius powers, Math. Z., 541-572 (2020) · Zbl 1455.13010 · doi:10.1007/s00209-019-02142-2
[11] Peskine, C., Liaison des variétés algébriques. I, Invent. Math., 271-302 (1974) · Zbl 0298.14022 · doi:10.1007/BF01425554
[12] Takagi, Shunsuke, On F-pure thresholds, J. Algebra, 278-297 (2004) · Zbl 1082.13004 · doi:10.1016/j.jalgebra.2004.07.011

This reference list is based on information provided by the publisher or from digital mathematics libraries. Its items are heuristically matched to zbMATH identifiers and may contain data conversion errors. It attempts to reflect the references listed in the original paper as accurately as possible without claiming the completeness or perfect precision of the matching.