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Ascending chain condition for $F$-pure thresholds on a fixed strongly $F$-regular germ. (English) 

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Fix an integer $n \geq 1$ and a prime number $p > 0$. Let $D_{n,p}^{reg}$ denote the collection of all $n$-dimensional $F$-finite regular local rings of characteristic $p$. The main result of this paper shows that the following set

$$T_{n,p}^{reg} := \{ fpt(A, a) \mid A \in D_{n,p}^{reg}, a \subseteq A \text{ is a proper ideal} \}$$

satisfies the ascending chain condition. This settles a conjecture of M. Blickle et al. [Trans. Am. Math. Soc. 361, No. 12, 6549–6565 (2009; Zbl 1193.13003)]. In fact, the author proves that the set of $F$-jumping numbers of a fixed germ of a strongly $F$-regular pair (with index not divisible by $p$) satisfies the ascending chain condition.

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MSC:

13A35 Characteristic $p$ methods (Frobenius endomorphism) and reduction to characteristic $p$; tight closure
14B05 Singularities in algebraic geometry
14L30 Group actions on varieties or schemes (quotients)

Keywords:

ascending chain condition; $F$-jumping number; $F$-pure threshold; tame quotient singularities; non-standard extension

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References:


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