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Remarks on the abundance conjecture. (English) Zbl 1365.14019

Proc. Japan Acad., Ser. A 92, No. 9, 101-106 (2016).

Let $\pi : X \to U$ be a projective morphism of varieties over $\mathbb{C}$ and (X, Δ) a log canonical pair. The abundance conjecture says that if $K_X + \Delta$ is π-nef (so that $(K_X + \Delta) \cdot C \geq 0$ for any curve C contained in fibers of π), then $K_X + \Delta$ is π-semiample i.e. there exists a morphism $f : X \to Y$ over U such that $K_X + \Delta \sim_{\mathbb{R}} f^*D$ for some $\mathbb{R}$-divisor D which is ample over U. This is one of the most important conjectures in higher dimensional birational geometry. It is known to hold if $\dim X = 3$.

The main result of the paper under review is to show that the abundance conjecture holds for n-dimensional varieties X such that $K_X + \Delta$ is π-big assuming that it holds in full generality for $(n-1)$-dimensional varieties. In particular the abundance conjecture holds for 4-folds X such that $K_X + \Delta$ is π-big. Recall that $K_X + \Delta$ is π-big if it is $\mathbb{R}$-linearly equivalent to the sum of a π-ample $\mathbb{R}$-divisor and an effective $\mathbb{R}$-divisor.

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MSC:

14E30 Minimal model program (Mori theory, extremal rays)
14J35 4-folds

Keywords:

abundance conjecture

Full Text: DOI Euclid arXiv