

On Seshadri constants of varieties with large fundamental group

GABRIELE DI CERBO AND LUCA F. DI CERBO

Abstract. Let X be a smooth variety and let L be an ample line bundle on X . If $\pi_1^{\text{alg}}(X)$ is large, we show that the Seshadri constant $\epsilon(p^*L)$ can be made arbitrarily large by passing to a finite étale cover $p : X' \rightarrow X$. This result answers affirmatively to a conjecture of J.-M. Hwang. Moreover, we prove an analogous result when $\pi_1(X)$ is large and residually finite. Finally, under the same topological assumptions, we appropriately generalize these results to the case of big and nef line bundles. More precisely, given a big and nef line bundle L on X and a positive number $N > 0$, we show that there exists a finite étale cover $p : X' \rightarrow X$ such that the Seshadri constant $\epsilon(p^*L; x) \geq N$ for any $x \notin p^{-1}\mathbf{B}_+(L) = \mathbf{B}_+(p^*L)$, where $\mathbf{B}_+(L)$ is the augmented base locus of L .

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