Sofic entropy of some subshifts of finite type

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For an amenable group G, entropy theory was developed by Ornstein and Weiss in [1]. Intuitevely, configurations on a Følner sequence (like n-balls around the origin in $\mathbb{Z}^k$) are counted and entropy exists by subbaditivity along it. When the group is not amenable, like $\mathbb{F}_2$, sofic entropy theory, developed by Bowen in [2], needs to be used.
Sofic entropy is a topological-dynamical invariant of dynamical systems and in general is very difficult to estimate. In this work the counting done by Ban et al. in [3] of configurations on trees is used to create microstates of an $\mathbb{F}_2$ action on a subshift of finite type on $\mathcal{A}^{\mathbb{F}_2}$. The upper bound obtained on sofic entropy is similar to the classical one of a $\mathbb{Z}$ SSFT.

[1] D. Ornstein, B. Weiss, Entropy and isomorphism theorems for actions of amenable groups ,J. Anal. Math. **48**, 1–141 (1987).

[2] L. Bowen, Measure conjugacy invariants for actions of countable sofic groups, J. Amer. Math. Soc. **23**, 217-245. (2010).

[3] J. Ban, C. Chang, W. Hu, Y. Yu, Topological entropy for shifts of finite type over Z and trees, Theoretical Computer Science. **930**, 24-32, (2022).