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Assouad dimension of self-similar sets with overlaps in $\mathbb{R}^d$

It was shown by Fraser, Henderson, Olson and Robinson that, in $\mathbb{R}$, the Assouad dimension of non trivial self-similar sets satisfies the dichotomy: if the weak separation property (WSP) holds then the Hausdorff and Assouad dimensions of the set coincide, while if WSP is not satisfied, then the Assouad dimension is 1. In $\mathbb{R}^d$, they show that if the self-similar set is in general position and the WSP is satisfied, then Hausdorff and Assouad dimensions still coincide, while if WSP does not hold then the Assouad dimension is at least 1. For this class of sets, we present a formula for the Assouad dimension that considers the overlapping directions. A lower bound for the Assouad dimension of the set is given by the dimension of the vector space spanned by these directions, with strict inequality if the dimension is smaller than d.