COLLINEAR FRACTALS: INNER STABILITY

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ABSTRACT. This poster investigates the connectedness loci, $\mathcal{M}_n$, of n-ary collinear fractals, $E(c, n)$. We define $E(c, n)$ as the attractor of an iterated function system parameterized by a complex number c outside the unit disk, and an integer $n \geq 2$. We establish that $\mathcal{M}_n$ is the set of parameters c for which $E(c, n)$ is connected. We introduce an inner stability principle, showing that if $2c$ lies in the interior of $E(c, 2n-1)$, then c lies in the interior of $\mathcal{M}_n$. Furthermore, we provide a direct proof of the generalized Bandt's conjecture, confirming that for all $n \geq 2$, the non-real part of $\mathcal{M}_n$ lies within the closure of its interior. We show that the roots c_0 of integer polynomials with coefficients restricted to $D_n = \{-n+1, -n+2, \ldots, n-1\}$ are the centers of the inner components of $\mathcal{M}_n$.

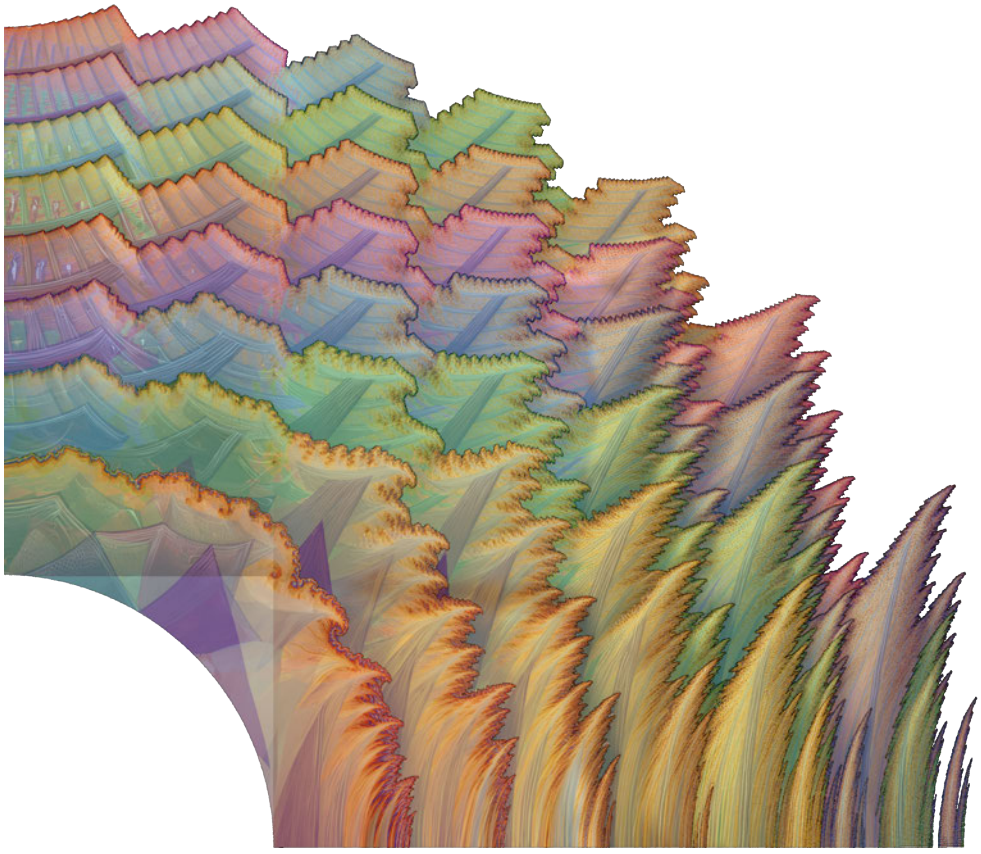

FIGURE 1. In our previous work [EJSn24], it was shown that for $n \geq 21$ the non-real part of $\mathcal{M}_n$ lies in the closure of its interior. In this poster, we provide a self-contained proof to the general case $n \geq 2$.

REFERENCES

[EJSn24] Bernat Espigule, David Juher, and Joan Saldaña. Collinear Fractals and Bandt's Conjecture. *Fractal and Fractional*, 8(12), 2024.

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