

A class of cubic Rauzy Fractals

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The Rauzy fractal is a compact subset of the space \mathbb{R}^{d-1} , $d \geq 2$. It has a fractal boundary and it induces two kind of tilings of \mathbb{R}^{d-1} , one of them is periodic and the other is auto-similar. Rauzy fractals are connected to many areas as substitution dynamical system, number theory among others.(see[1, 2, 3]).

In this work we study arithmetical and topological properties of two classes of Rauzy fractals (\mathcal{R} and \mathcal{G}) given by the polynomial $x^3 - ax^2 + x - 1$ where $a \geq 2$ is an integer. We give explicitly an automaton that generates the boundary of \mathcal{R} and \mathcal{G} . With this we prove that \mathcal{R} has 8 neighbours while \mathcal{G} has always 6. Moreover in the case $a = 2$ we can give further information on the boundary of these sets.

References

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