

RENORMALIZATION IN PARAMETRIC FAMILIES OF POLYGON-EXCHANGE TRANSFORMATIONS

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We consider two parameteric families of polygon-exchange transformations, where the (fixed) rotational component is defined over a quadratic number field, while the translations depend on a parameter, which is allowed to vary in an interval. We show that a suitable induction eventually generates a scaled version of the original map, re-parametrized by a Lüroth-type function – a piecewise affine version of Gauss' map. The parameter values corresponding to exact scaling are found to be precisely the elements of the underlying quadratic field. Our proofs require computer-assistance. I'll discuss some phenomena appearing in many-parameter families.