

1117-37-364 **Thomas Noll*** (thomas.mamuth@gmail.com), Pfarrstr. 6, D 04860 Torgau, Germany. *The Aeolian and the Major Substitutions and their associated Dynamical Systems.*

The paper contributes to the study of the diatonic modes on the basis of [1] and [2] and extends [3]. The *aeolian substitution* $a \mapsto abaa, b \mapsto baa$ induces a lattice path transformation, which (together with its dual map) offers relevant music-theoretical interpretations. The dual map further gives rise to a dynamical system on a certain line segment in \mathbb{R}^2 . This dynamics robustly mimics the descending scale, while the $B - Bb$ -ambiguity corresponds to the only point, where the evolution function is not well-defined. The *major substitution* $a \mapsto ab, b \mapsto ca, c \mapsto bac$ on 3 letters leads to a dynamical system on a plane segment in \mathbb{R}^2 with similar chromatic ambiguities.

References

- [1] Arnoux, P. and Shunji Ito. Pisot Substitutions and Rauzy Fractals. *Bulletin of the Belgian Mathematical Society* 8: 181–207, 2001.
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- [3] Noll, Thomas and Mariana Montiel, 2013, Glareans Dodecachordon Revisited. MCM 2013 proceedings, Berlin: Springer. 2013: 151- 166.

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