Universiteit Leiden
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# Intermittency and number expansions for random interval maps

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# Stellingen

behorende bij het proefschrift

*Intermittency and Number Expansions for Random Interval Maps*

van

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1. A critically intermittent system undergoes a phase transition in which the absolutely continuous invariant measure changes between finite and infinite when varying the average critical order of the superstable fixed point.

   [Chapter 2]

2. The level of attraction to the superstable fixed point determines the polynomial rate at which correlations in a critically intermittent system decay.

   [Chapter 3]

3. The phase transition described in Proposition 1 continues to exist when changing the level of attraction to and repulsion from the fixed points, as long as the former is an order of magnitude larger than the latter.

   [Chapter 4]

4. Lochs' Theorem can be generalized to a large class of random dynamical systems in one dimension. The geometry of the space is important and in general Lochs' Theorem does not hold in higher dimension.

   [Chapter 5]

5. Determining the digits in the base-2 representation from the output of a beta-encoder is an effective way to generate large pseudo-random numbers regardless of quantisation errors, but it is not when there is noise in the amplification or in the scaling as well.

   [Chapter 6]

6. The more an invariant density is regular, the more chaotic is the corresponding dynamical system.

7. Just as entropy is a good measure for the complexity of a dynamical system, fiber entropy is a good measure for the annealed complexity of a random dynamical system.

8. The properties of the first return time map associated to an inducing domain in which orbits stay relatively short are closely related to the statistical properties of the system.

[Chapters 2, 3 and 4]

9. The number of road work zones in Leiden over time is an example of exponential growth.

10. Spectral imaging and deep learning methods will revolutionise essential industrial procedures, such as radiologic quality control and tomographic inspection. (M.T. Zeegers, 2023)

11. In a scientific article, it is always better to explain slightly too much than too little.

12. In a world where profit-driven publishers dominate academic publishing and scientific articles are hidden behind expensive paywalls, it is essential that open access platforms like Sci-Hub and Libgen exist.