

Cours Dynamique Symbolique

Cours n°1

Présentation

Titre / Dynamique Symbolique
Symbolic dynamics

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New course \rightarrow Page en construction.

\rightarrow Some Document.

Dynamical system



Space X

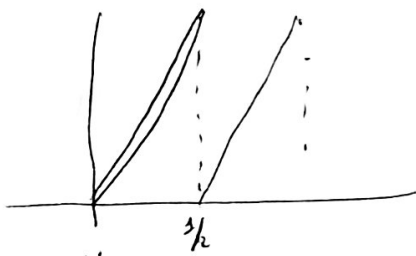
Transformation $T: X \rightarrow X$

$x_0, T(x_0), T(T(x_0)) = T^2(x_0), T^3(x_0) \dots$

Long term evolution of this trajectory.

Example

$I = [0, 1)$ $T(x) = \{2x\}$ fractional part of $2x$



\rightarrow Encoding of trajectory

$0 \leftrightarrow T^n(x_0) \in [0, 1/2)$
 $1 \leftrightarrow T^n(x_0) \in [1/2, 1)$

$x_0 \rightarrow$ sequence of 0, 1
binary expansion of x

For almost all, $\text{freq}(x_0) = 1/2$

Applications & Links

- Automata : simple system described by automa.
Sfic system, systeme de type fini.
- Combinatorics / Combinatorics on words.
- Analysis of algorithms
worst case behavior / mean behavior
→
- Verification
- Physique (Quasi-cristaux)
- Aléatoire