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Ergodic Theory of Random Transformations

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To my family

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Frequently used notations

$\mathcal{B}(M)$- the Borel σ-algebra of M.

$\mathbb{C}(M,N)$-the space of continuous maps from M to N.

$\mathbb{C}^k$-class - continuous together with k-derivatives.

Df-the differential of a map f.

$\mathbb{E}r$-the expectation of a random variable r.

$\mathbb{F}$-a space of transformations on $\mathbf{M}$.

$\mathbf{f}$- a random transformation with a distribution $\mathfrak{m}$.

$\mathbf{F}$- a random bundle map with a distribution $\mathfrak{n}$.

$^n\mathbf{f} = \mathbf{f}_n \circ \cdots \circ \mathbf{f}_1$, $\quad ^n\mathbf{F} = \mathbf{F}_n \circ \cdots \circ \mathbf{F}_1$, $D\, ^n\mathbf{f}$ means the differential of $^n\mathbf{f}$.

$\mathbf{h}_\rho(\mathbf{f})$- the metric entropy of $\mathbf{f}$ with respect to an invariant measure ρ.

$h(\mathbf{f})$- the topological entropy of $\mathbf{f}$.

$\mathbb{I}$ - the unit interval.

$\mathbb{L}(M,\eta)$ - the space of functions g with $\int_M |g|\,d\eta < \infty$

$$\mathbf{p} = \mathfrak{m}^\infty \text{ or } \mathbf{p} = \mathfrak{n}^\infty.$$

$\mathbb{P}\{A\}$- the probability of A.

χ_A- the indicator of a set A i.e., $\chi_A(x) = 1$ if $x \in A$ and $= 0$ for otherwise.

$\mathcal{P}(M)$- the space of probability measures on M.

Π^{m-1} - the $(m-1)$-dimensional projective space.

$\mathbb{R}^m$ - the m-dimensional Eucledean space.

$\mathbb{S}$ - the unit circle.

$\mathfrak{T}$-a space of vector bundle maps.

TM - the tangent bundle of a smooth manifold **M**.

$$\Omega = \mathfrak{F}^{\infty} \text{ or } \Omega = \mathfrak{T}^{\infty}.$$

▪ - the end of the proof.

Statement i.j - i denotes the section and j denotes the number of this statement in the section. The Roman number at the beginning (for instance, III.1.2) means the number of the chapter.