

SIMPLE MODELS OF STRINGS OF CHARACTERS WITH INFINITE ALPHABET WITH APPLICATIONS TO ORDER BOOK DYNAMICS

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Abstract

We consider the a family of Markov chains defined on the sequences of characters (strings, or words) with infinite alphabet. For some examples inspired by the models of high frequency trading we obtain a conditions for ergodicity, transience and null recurrence. In order to prove this we use the construction of Lyapunov functions techniques.

REFERENCES

- [1] GAJRAT, V.A. MALYSHEV AND M.V. MENSHIKOV, *Classification of Markov Chain Describing the Evolution of Random Strings*. [Research Report] RR-2022, 1995, Moscow State University.
- [2] G. FAYOLLE, V.A. MALYSHEV AND M.V. MENSHIKOV, *Topics in Constructitve Theory of Countable Markov Chain*. Cambridge Univ. Press, Cambridge 1993.
- [3] D. VERE- JONES, *Ergodic Properties of Nonnegative Matrices-I*. Pacific Journal of Mathematics Vol. 22, N.2, 1967. Institute of Advanced Studies Australian National University.