Measuring the rate of convergence in the Birkhoff ergodic theorem

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There are two different approaches to the measuring of the rate of convergence in Birkhof's ergodic theorem; see the discussion in [1].

The first one, closely related with probabilities of large deviations, was studied in [2]. Now this approach is well developed. There were obtained estimates of the rate of convergence in the Birkhoff ergodic theorem for many classes of dynamical systems popular in applications, including some well-known billiards and Anosov systems [3].

The second approach (pointwise rate of convergence) was studied in [1] and [4], and many interesting questions still are open here.

References

- Alexander G. Kachurovskii, Ivan V. Podvigin. Measuring the rate of convergence in the Birkhoff ergodic theorem. Mathematical Notes, 106(1): 52-62, 2019.
- [2] Alexander G. Kachurovskii, Ivan V. Podvigin. Large deviations and the rate of convergence in the Birkhoff ergodic theorem. *Mathematical Notes*, 94(4): 524-531, 2013.
- [3] Alexander G. Kachurovskii, Ivan V. Podvigin. Estimates of the rate of convergence in the von Neumann and Birkhoff ergodic theorems. Transactions of the Moscow Mathematical Society, 77: 1-53, 2016.
- [4] Alexander G. Kachurovskii, Ivan V. Podvigin, Alexander A. Svishchev. The maximum pointwise rate of convergence in Birkhoff's ergodic theorem. *Journal of Mathematical Sciences*, 255(2): 119–123, 2021.