



Boris Hasselblatt (Ed.)

Ergodic Theory and Negative Curvature

CIRM Jean-Morlet Chair, Fall 2013

Series: Lecture Notes in Mathematics

- Accessible to graduate students
- Provides introductions leading to the forefront of several current research areas
- A broad sampling of ergodic geometry

Focussing on the mathematics related to the recent proof of ergodicity of the (Weil–Peterson) geodesic flow on a nonpositively curved space whose points are negatively curved metrics on surfaces, this book provides a broad introduction to an important current area of research. It offers original textbook-level material suitable for introductory or advanced courses as well as deep insights into the state of the art of the field, making it useful as a reference and for self-study. The first chapters introduce hyperbolic dynamics, ergodic theory and geodesic and horocycle flows, and include an English translation of Hadamard's original proof of the Stable-Manifold Theorem. An outline of the strategy, motivation and context behind the ergodicity proof is followed by a careful exposition of it (using the Hopf argument) and of the pertinent context of Teichmüller theory. Finally, some complementary lectures describe the deep connections between geodesic flows in negative curvature and Diophantine approximation.

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