

Ergodic Theory and Topological Dynamics of Group Actions on Homogeneous Spaces

M. Bachir Bekka & Matthias Mayer

The study of geodesic flows on homogeneous spaces is an area of research that has in recent years yielded some fascinating developments. This book focuses on many of these, and one of its highlights is an elementary and complete proof (due to Margulis and Dani) of Oppenheim's conjecture. Also included here: an exposition of Ratner's work on Raghunathan's conjectures; a complete proof of the Howe-Moore vanishing theorem for general semisimple Lie groups; new treatment of Mautner's result on the geodesic flow of a Riemannian symmetric space; Mozes' result about mixing of all orders and the asymptotic distribution of lattice points in the hyperbolic plane; Ledrappier's example of a mixing action which is not a mixing of all orders.

The treatment is as self-contained and elementary as possible. It should appeal to graduate students and researchers interested in dynamical systems, harmonic analysis, differential geometry, Lie theory and number theory.