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 William Parry and Selim Tuncel
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Classification Problems in Ergodic Theory

WILLIAM PARRY and SELIM TUNCEL
Mathematical Institute
University of Warwick

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PREFACE

These notes grew out of M. Sc. lecture courses given by the first named author at the Mathematics Institute (University of Warwick) in 1976 and 1977. To be more precise, the material presented here is concerned only with those parts of the courses which are not to be found in well known texts, together with additional material, organised by the second named author, which was not presented in the above courses.

The M. Sc. audience was expected to be familiar with measure and integration theory and it was assumed that students had had at least some contact with elementary functional analysis including Hilbert space theory. The foundations of the course, which were discussed in an informal tutorial fashion, consisted roughly of the following topics: measure-preserving transformations, recurrence, Birkhoff's and von Neumann's ergodic theorems, conditional expectation, increasing and decreasing sequences of σ -algebras and the associated Martingale theorems, information, entropy and the Shannon-McMillan-Breiman theorem. Students were expected to read these topics as an integral part of the course and were advised to refer to the relevant sections of [H], [R. 2], [W. 1] (to which we would now add [P. 1]). Readers of these notes who are unfamiliar with these foundations are similarly advised.

We offer our thanks to M. Keane and M. Smorodinsky for a number of consultations concerning Chapter III. We would also like to record our gratitude to Klaus Schmidt and Peter Walters for helpful critical comments concerning an earlier draft of these notes.