ERGODIC THEORY, GROUP REPRESENTATIONS, AND RIGIDITY

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ADDED IN PROOF. Complete and detailed proofs of all the results discussed in these lectures (except those in section 4), as well as further developments, will appear in a forthcoming monograph of the author.

1. Basic notions. In these lectures we discuss some topics concerning the relationship of ergodic theory, representation theory, and the structure of Lie groups and their discrete subgroups.

In studying the representation theory of groups, the assumption of compactness on the group essentially allows one to reduce to a finite dimensional situation, in which case one often can obtain complete information. For noncompact groups, of course, no such reduction is possible and the situation is much more complex. When studying general actions of groups, a somewhat