

RESEARCH ANNOUNCEMENTS

The purpose of this department is to provide early announcement of significant new results, with some indications of proof. Although ordinarily a research announcement should be a brief summary of a paper to be published in full elsewhere, papers giving complete proofs of results of exceptional interest are also solicited. Manuscripts more than eight typewritten double spaced pages long will not be considered as acceptable. All research announcements are communicated by members of the Council of the American Mathematical Society. An author should send his paper directly to a Council member for consideration as a research announcement. A list of the members of the Council for 1971 is given at the end of this issue.

FROBENIUS RECIPROCITY IN ERGODIC THEORY

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1. Introduction. The analogy between group actions and group representations, which has guided algebraists' intuition since the turn of the century, has been slow in influencing analysis. To be sure, the analogy between "strict sense" and "wide sense" notions, first noticed in probability, can be traced to be a natural analog of the preceding analogy, and in fact has led to the discovery of a host of new results (for example by Nelson¹ and Rota where the strict sense analogs of well-known Hilbert-space theorems of Nagy and Naïmark are worked out). More recently, a conjecture of Rota (1962) regarding a strict-sense analog of Schreiber's Theorem has been settled in the affirmative by McCabe and Shields, using Ornstein's deep results relating entropy to conjugacy. Despite this and much other work, however, a systematic "spectral theory in the strict sense" for ergodic trans-

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Key words and phrases. Induced ergodic action, locally compact group, group action, ergodic, "strict sense", groupoid, virtual group, adjoint functor, Mackey functor, induced representation.

¹ Authors' names refer to the bibliography at the end. The results of the present announcement were first presented by Rota at the Symposium on Functional Analysis held at the U. S. Naval Postgraduate School in Monterey, California, in October 1969. We are grateful to Professor Carroll Wilde for permission to reproduce parts of Professor Rota's lecture outside the Proceedings of the Symposium. Professor Rota's work was carried out under O.N.R. Contract N00014-67-A-0204-0016 and Professor Ramsay's under NSF Grant GP 11622.