

# Pacific Journal of Mathematics

**CORRECTION TO "SOME ERGODIC THEOREMS INVOLVING  
TWO OPERATORS"**

PAUL CIVIN

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The argument used to establish Theorem 1 of [1] proves less than asserted. Let the notation be that of [1]. Theorem 3 is then a consequence only if  $\mu(S) < \infty$  and therefore Theorems 4 and 5 must be withdrawn. The revised version of Theorem 1 is as follows.

**THEOREM 1.1.** *Let  $t$  and  $u$  be nonsingular measurable transformations of  $S$  onto itself which have no wandering sets of positive measure. If for each  $f(x)$ ,  $0 \leq f(x) \leq 1$ ,  $\lim_{n \rightarrow \infty} \sum_{k=0}^n f(v^k x)/n$  exists almost everywhere  $[\mu]$ , then the conclusion of Theorem 1 holds.*

By Theorem 3 of [2] there exists a finite  $t$ -invariant measure  $\alpha$  and a finite  $u$ -invariant measure  $\beta$ , each equivalent to  $\mu$ . The argument proceeds as before with these  $\alpha$  and  $\beta$ . In Theorem 2, the  $\alpha$  and  $\beta$  are also obtained as above.

The author is indebted to Professors Y. N. Dowker and S. Tsurumi for their communications.

## REFERENCES

1. Paul Civin, *Some ergodic theorems involving two operators*, Pacific J. Math. **5** (1955), 869-876.
2. Yeal Naim Dowker, *Finite and  $\sigma$ -finite invariant measures*, Ann. Math. **54** (1951), 595-608.



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# Pacific Journal of Mathematics

Vol. 6, No. 4

, 1956

Seymour Ginsburg, <i>On mappings from the family of well ordered subsets of a set</i> .....	583
Leon Ehrenpreis, <i>Some properties of distributions on Lie groups</i> .....	591
Marion K. Fort, Jr., <i>A geometric problem of Sherman Stein</i> .....	607
Paul R. Garabedian, <i>Calculation of axially symmetric cavities and jets</i> .....	611
Walter Mossman Gilbert, <i>Completely monotonic functions on cones</i> .....	685
William L. Hart and T. S. Motzkin, <i>A composite Newton-Raphson gradient method for the solution of systems of equations</i> .....	691
C. W. Mendel and I. A. Barnett, <i>A functional independence theorem for square matrices</i> .....	709
Howard Ashley Osborn, <i>The problem of continuous programs</i> .....	721
William T. Reid, <i>Oscillation criteria for linear differential systems with complex coefficients</i> .....	733
Irma Reiner, <i>On the two-adic density of representations by quadratic forms</i> .....	753
Shoichiro Sakai, <i>A characterization of <math>W^*</math>-algebras</i> .....	763
Robert Steinberg, <i>Note on a theorem of Hadwiger</i> .....	775
J. Eldon Whitesitt, <i>Construction of the lattice of complemented ideals within the unit group</i> .....	779
Paul Civin, <i>Correction to "Some ergodic theorems involving two operators"</i> .....	795