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Ergodic properties of contraction semigroups in L_p**,** $1 < p < \infty$

Comment.Math.Univ.Carolinae 35,2 (1994) 337-346.

Abstract: Let $\{T(t) : t > 0\}$ be a strongly continuous semigroup of linear contractions in L_p, $1 < p < \infty$, of a σ-finite measure space. In this paper we prove that if there corresponds to each $t > 0$ a positive linear contraction $P(t)$ in L_p such that $|T(t)f| \leq P(t)|f|$ for all $f \in L_p$, then there exists a strongly continuous semigroup $\{S(t) : t > 0\}$ of positive linear contractions in L_p such that $|T(t)f| \leq S(t)|f|$ for all $t > 0$ and $f \in L_p$. Using this and Akcoglu's dominated ergodic theorem for positive linear contractions in L_p, we also prove multiparameter pointwise ergodic and local ergodic theorems for such semigroups.

Keywords: contraction semigroup, semigroup modulus, majorant, pointwise ergodic

theorem, pointwise local ergodic theorem
AMS Subject Classification: 47A35