ROCKY MOUNTAIN
JOURNAL OF MATHEMATICS
Volume 24, Number 3, Fall 1994

THE FILLING SCHEME IN ARCHIMEDEAN RIESZ SPACES

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ABSTRACT. In the paper we extend the filling scheme as formulated by Akcoglu and Chacon to a class of Archimedean Riesz spaces; we then apply the filling scheme (in our more general setting) in order to prove two ratio ergodic theorems.

The Archimedean Riesz spaces under consideration are not necessarily spaces of classes of equivalence of measurable functions; therefore, in our approach we have to avoid measure theoretical considerations; we do so by using notions and arguments which we introduced in previous papers.

1. Introduction. Our goal here is to extend the filling scheme as defined by Akcoglu and Chacon in their paper [**1**] to a class of Archimedean Riesz spaces, and to use the scheme in order to prove two ratio ergodic theorems similar to an extension of the Ornstein ratio ergodic theorem [**6**, Theorem 1.1] which we obtained in [**9**] (the Ornstein ratio ergodic theorem is an extension of the famous Chacon-Ornstein theorem [**3**]; for a description of the evolution of the topic, as well as for additional references see Krengel's book [**4**] and our paper [**9**]).

The terminology used in this paper can be found in the books of Aliprantis and Burkinshaw [**2**], Luxemburg and Zaanen [**5**], Schaefer [**7**], and in our papers [**8, 9**].

Besides the Introduction, the paper has three more sections. Section 2 (the next section) has a preliminary character; the section contains several results of a rather general nature which will be used later on. In Section 3 we extend the filling scheme to a class of Archimedean Riesz spaces. Finally, in the last section (Section 4) we apply the results obtained in the previous sections in order to prove two ratio ergodic theorems.

We will now describe the mathematical setting and the results of the paper.

Received by the editors on July 1, 1991.