

STOCHASTIC APPROXIMATION REVISITED*

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There have been numerous studies of stochastic approximation since it was first considered by Robbins and Monro in a famous paper in 1951. Many specific schemes have been devised and general methods subsuming those have been developed. Proofs of a.s. convergence and of mean-square convergence are among the major results in this area.

Originally real-valued random variables were considered but later the results were generalized to Euclidean-valued and Hilbert-valued random variables and the results about a.s. convergence were extended to these cases.

The main purpose of this paper is to provide very short proofs of mean-square, as well as almost-sure, convergence in Hilbert space. Moreover, the paper considers a general scheme which allows to treat the case where the looked for parameter drifts as the observations proceed.

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