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Convergence of a general stochastic approximation process under convex constraints and some applications. (English) [Zbl 0546.62057](#)

Mathematical learning models - theory and algorithms, Proc. Conf., Bad Honnef/Ger. 1982, Lect. Notes Stat. 20, 156-167 (1983).

[For the entire collection see [Zbl 0517.00013](#).]

A general stochastic approximation process (s.a.p.) in a closed convex subset of a separable Hilbert space is considered and a.s. convergence is proved. The results include as special cases the *D. Ruppert's* dynamic s.a.p. [Ann. Stat. 7, 1179-1195 (1979; [Zbl 0427.62059](#))], *L. Ljung's* s.a.p. with correlated observations [ibid. 6, 680-696 (1978; [Zbl 0402.62060](#))], as well as *A. E. Albert* and *L. E. Gardner's* s.a.p.'s for estimating regression models [Stochastic approximation and nonlinear regression. (1967; [Zbl 0162.215](#))]. The presentation is rather short, details being given in the author's Ph. D. dissertation, Université de Nancy I (1982).

Reviewer: [R.Zielinski](#)

MSC:

[62L20](#) Stochastic approximation
[62J02](#) General nonlinear regression
[60F15](#) Strong limit theorems

Keywords:

[convex constraints](#); [martingales](#); [separable Hilbert space](#)