A quantitative nonlinear strong ergodic theorem for Hilbert spaces

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We give a quantitative version of a strong nonlinear ergodic theorem for (a class of not necessarily nonexpansive) selfmappings of an arbitrary subset of a Hilbert space due to R. Wittmann and outline how the existence of uniform bounds in such quantitative formulations of ergodic theorems can be proved by means of a general logical metatheorem. Furthermore, we extract such uniform bounds in our quantitative formulation of Wittmann's theorem using the proof-theoretic techniques on which the metatheorem is based.

Keywords: Proof mining, uniform bounds, functionals of finite type, nonlinear ergodic theory, strong convergence, Cesàro means, hard analysis

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