1067-03-391   **Ulrich Kohlenbach*** (`kohlenbach@mathematik.tu-darmstadt.de`), Ulrich Kohlenbach,
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Uniform Bounds from Proofs in Nonlinear Ergodic and Fixed Point Theory.

In this talk we present some recent results in the 'proof mining' program of extracting effective uniform bounds from proofs. More specifically, we give

- an effective and highly uniform rate of so-called metastability (in the sense of Tao) for a nonlinear generalization of the Mean Ergodic Theorem due to Wittmann that establishes the strong convergence of an iteration for nonlinear nonexpansive mappings that – in the linear case – coincides with the Cesàro means;

- an effective and uniform bound for a metastable version of Baillon's nonlinear ergodic theorem (this time with weak convergence only) extracted from a proof due to Brézis and Browder of that theorem.

We also mention another 'proof-mining' result (together with D. Körnlein) which gives an explicit convergence rate for an asymptotic regularity result due to Chidume and Zegeye for Lipschitzian pseudocontractive mappings in arbitrary Banach spaces. In the bounded case this rate is polynomial in the data involved. (Received August 31, 2010)