► LAURENŢIU LEUŞTEAN, PEDRO PINTO, *Proof mining and asymptotic regularity.*
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This talk presents a recent application of proof mining to the asymptotic behavior of the alternating Hapern-Mann iteration for nonexpansive mappings [2]. Proof mining is a subfield of applied proof theory concerned with the extraction of new quantitative and qualitative information from mathematical proofs, with the help of proof-theoretic tools. This paradigm of research, developed by Ulrich Kohlenbach and collaborators, is inspired by Kreisel's program on unwinding of proofs from the 1950s. We present extensions to UCW-hyperbolic spaces of the quantitative asymptotic regularity results for the alternating Halpern-Mann iteration obtained by Dinis and Pinto for CAT(0) spaces [1]. These results are new even for uniformly convex normed spaces. Furthermore, for a particular choice of the parameter sequences, we compute linear rates of asymptotic regularity in W-hyperbolic spaces and quadratic rates of T- and U-asymptotic regularity in CAT(0) spaces.

[1] B. Dinis, P. Pinto, *Strong convergence for the alternating Halpern-Mann iteration in CAT(0) spaces*, arXiv:2112.14525 [math.FA]; accepted for publication in ***SIAM Journal on Optimization*** (2023).

[2] L. Leuştean, P. Pinto, *Rates of asymptotic regularity for the alternating Halpern-Mann iteration*, arXiv:2206.02226 [math.OC]; accepted for publication in ***Optimization Letters*** (2023).