Iteration complexity of Douglas-Rachford splitting applied to minimization problems on symmetric Hadamard manifolds

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The iteration complexity analysis of some optimization methods in the Riemannian setting have been presented in the literature in the last years; see, for instance, [1,2] and references therein. In this talk we will discuss the iteration complexity of the Douglas-Rachford method (DRM) applied to minimization problems where objetive function is $F(x) := \Phi(x) + \Psi(x)$, $x \in M$, where M is a Hadamard manifold and $\Phi, \Psi : M \to \mathbb{R} \cup \{+\infty\}$ are convex functions. A convergence proof was recently presented by Bergmann, Persch, Steidl in [5] for minimizing ROF-like functionals on Images with values in symmetric Hadamard manifolds. We base our analysis on their work, Numerical results will be included.

References

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[3] Bergmann, J. Persch and G. Steidt, G.: A parallel Douglas-Rachford algorithm for minimizing ROF-like functionals on images with values in symmetric Hadamard manifolds *SIAM J. Imaging Sciences* **9**(3) (2016), pp. 901–937