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Abstract

We study the convergence behavior of a class of projection methods for solving convex feasibility and optimization problems. We prove that the algorithms in this class converge to solutions of the consistent convex feasibility problem, and that their convergence is stable under summable perturbations. Our class is a subset of the class of string-averaging projection methods, large enough to contain, among many other procedures, a version of the Cimmino algorithm, as well as the cyclic projection method. A variant of our approach is proposed to approximate the minimum of a convex functional subject to convex constraints. This variant is illustrated on a problem in image processing: namely, for optimization in tomography.