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Yakov Alber* (alberya@gmail.com). *Applications of Banach Space Geometry for Optimization Problems and Variational Inequalities.*

We plan to give the short survey of all the known generalized projection operators in Banach spaces based on the Young-Fenchel transformations of conjugate functions. We apply these operators to describe the explicit and implicit (proximal) projection methods and present the convergence, stability and estimates of the convergence rate results for approximating sequences of iterations. We study methods for operator equations, optimization problems and variational inequalities in Banach spaces with both Hausdorff- and Mosco-perturbations of the constraint sets. We are also going to state final decomposition results for arbitrary elements in Banach spaces and decompositions of Banach spaces themselves. (Received September 22, 2011)