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The hybrid steepest descent method for the variational inequality problem over the intersection of fixed point sets of nonexpansive mappings. (English) [\[Zbl 1013.49005\]](#)

Butnariu, Dan (ed.) et al., Inherently parallel algorithms in feasibility and optimization and their applications. Research workshop, Haifa, Israel, March 13-16, 2000. Amsterdam: North-Holland/ Elsevier. Stud. Comput. Math. 8, 473-504 (2001).

This paper presents a simple algorithmic solution to the variational inequality problem defined over the nonempty intersection of multiple fixed point sets of nonexpansive mappings in a real Hilbert space. The algorithmic solution is named the hybrid steepest descent method and generates a sequence strongly convergent to the solution of the problem.

The applicability of this method to the convexly constrained generalized pseudoinverse problem as well as to the convex feasibility problem is demonstrated by constructing nonexpansive mappings whose fixed point sets are the feasible sets of the problem.

For the entire collection see [\[Zbl 0971.00058\]](#).

Reviewer: [Ruxandra Stavre \(București\)](#)

MSC:

[49J40](#) Variational inequalities

[47H10](#) Fixed-point theorems

[47J20](#) Variational and other types of inequalities involving nonlinear operators (general)

[65K10](#) Numerical optimization and variational techniques

[47H09](#) Contraction-type mappings, nonexpansive mappings, A -proper mappings, etc.

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Keywords:

[variational inequality](#); [fixed point set](#); [hybrid steepest descent method](#)