Split variational inclusion problem and fixed point problem for asymptotically nonexpansive semigroup with application to optimization problem

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Abstract

The purpose of this paper is by using the shrinking projection method to introduce and study an iterative process to approximate a common solution of split variational inclusion problem and fixed point problem for an asymptotically nonexpansive semigroup in real Hilbert spaces. Further, we prove that the sequences generated by the proposed iterative method converge strongly to a common solution of split variational inclusion problem and fixed point problem for an asymptotically nonexpansive semigroup. As applications, we shall utilize the results to study the split optimization problem and the split variational inequality.

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