

**Borwein, Jonathan M.**

**Alternative theorems for general complementarity problems.** (English) Zbl 0591.90088

Infinite programming, Proc. Int. Symp., Cambridge/U.K. 1984, Lect. Notes Econ. Math. Syst. 259, 194-203 (1985).

[For the entire collection see [Zbl 0569.00009](#).]

Let  $X, Y$  be a pair of topological vector spaces with an associated bilinear form  $\langle \cdot, \cdot \rangle$ . For a given closed convex cone  $S \subset X$ , and a mapping  $T : S \rightarrow Y$ , the topological complementarity problem, TCP( $v$ ), is to find a solution  $x$  to:  $\langle T(x) + v, x \rangle = 0, x \in S, T(x) + v \in S^+$ ; for  $v \in Y$ . Here  $S^+$  denotes the dual cone to  $S$  in  $Y$ . The author has proved a convex alternative theorem. He has then applied it in several different frameworks, to establish the existence of solutions to the TCP.

Reviewer: K.G.Murty

**MSC:**

**90C33** Complementarity and equilibrium problems and variational inequalities (finite dimensions) (aspects of mathematical programming)

**90C48** Programming in abstract spaces

**49J27** Existence theories for problems in abstract spaces

Cited in **1** Review  
Cited in **4** Documents

**Keywords:**

monotonicity; copositivity; coercivity; P matrices; order; complementarity; bilinear form; topological complementarity problem; convex alternative theorem; existence of solutions