ON THE WELL-POSEDNESS OF DIFFERENTIAL MIXED QUASI-VARIATIONAL-INEQUALITIES

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ABSTRACT. We discuss the well-posedness and the well-posedness in the generalized sense of differential mixed quasi-variational inequalities (DMQVI{s}, for short) in Hilbert spaces. This gives us an outlook to the convergence analysis of approximating sequences of solutions for (DMQVI{s}). Using these concepts we point out the relation between metric characterizations and well-posedness of (DMQVI{s}). We also prove that the solution set of (DMQVI{s}) is compact, if problem (DMQVI{s}) is well-posed in the generalized sense.

1. Introduction

Let $X$ be a Hilbert space whose norm and scalar product are $\| \cdot \|_X$ and $\langle \cdot, \cdot \rangle_X$, respectively. The norm convergence is denoted by $\rightarrow$ and the weak convergence by $\rightharpoonup$. Let $0 < T < +\infty$ and $I := [0, T]$. Recall that the Hilbert space $L^2(I, X)$ is endowed with the scalar product defined by

$$\langle u_1, u_2 \rangle_{L^2(I, X)} := \int_0^T \langle u_1(t), u_2(t) \rangle_X \, dt,$$

for all $u_1, u_2 \in L^2(I, X)$.