A New Approach to Geometrical Convergence of Schwarz Method for Parabolic Quasi-Variational Inequalities.

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Abstract

Historically, Schwarz method has been introduced by Herman Amondus Schawarz, in order to resolve a purely theoretical matters. The Schawarz alternating method has been used to solve the stationary or evolutionary boundary valued problems, on domain which consists of two or more overlapping sub-domains.

.In this work we provide a new approach to geometrical convergence of Schwarz Method for Parabolic Quasi- Variational Inequalities.

We consider a parabolic quasi-variational inequalities .

$$\begin{cases} \dfrac{\partial u}{\partial t} + Au \le f \qquad \forall u \in K \\ u \le Mu \\ Mu = k + inf u(x+\epsilon), \ \ \epsilon \ge 0 \end{cases}$$

where k > 0, M is operator satisfies $Mu \in W^{2,\infty}(\Omega)$ and K is an implicit convex and non empty set. The sequences (u_h^{2n}), (u_h^{2n+1}), $n \ge 0$ produced by the Schwarz alternating method converge geometrically to the solution u_h of the discret parabolic quasi-variational inequalities (PQVI).

Keywords: Schwarz Method, geometrical convergence, Parapolique Quasi-Variational Inequalities.
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