数学与系统科学研究院

计算数学所学术报告

报告人： **Prof. Michel Thera**

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报告题目：

Periodic solutions for Evolution Variational Inequalities

邀请人： 袁亚湘研究员

报告时间： 2008 年 4 月 7 日(周一)

下午 3:30—4:30

报告地点： 科技综合楼三层 311

计算数学所报告厅

Abstract： This talk concerns the existence of a T-periodic solution u \in C^0([0,T];R^n) of the evolution variational inequality: du(t)/dt+F(u(t))-f(t) \in \partial\phi(u

(t)), a.e. $t \in [0,T]$. (1.1) In this problem the solution u satisfies: $du/dt \in L^\infty(0,T;R^n)$; u is right differentiable on $[0,T]$; $u(0)=u(T)$. We suppose that $F: R^n-->R^n$ is a continuous map, $\phi: R^n-->R$ is a convex function with convex subdifferential $\partial\phi$, $f \in C^0([0,+\infty);R^n)$ is such that: $df/dt \in L^1_{lo}(0,+\infty;R^n)$ and $T>0$ is a prescribed period. The presentation will be organized as follows. We will recall some basic materials with a particular attention given to the Brouwer topological degree, since it plays a central role in our approach. We will also recall the Schowalter Theorem and we will highlight how the problem of the existence of a periodic solution of the evolution problem (1.1) is equivalent to the existence of a fixed point of the Poincare operator associated to the problem under consideration. Finally, we will present an existence result for periodic solutions of problem (1.1) using the method of guiding functions. Second order periodic dynamical systems with friction will be also considered as well as some application to the simulation of the bowing of a violin string by a mass-spring system.

欢迎大家参加!