

数学与系统科学研究院

计算数学所学术报告

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报告题目:

**Qualitative analysis of nonsmooth
dynamics**

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上午 10:00-11:00

报告地点: 数学院南楼七层

702 会议室

Abstract:

After the publication of a monograph on the same subject, this lecture presents a few qualitative aspects recently investigated of the dynamics of mechanical systems submitted to contact and friction conditions.

It will be recalled that the constitutive laws associated with contact and friction are given by graphs which are not those of functions. Special attention will be paid to the fact that, quite the opposite most of softwares and engineering studies, these graphs should not be regularized in order to keep convenient physical meanings. But this requirement, although justified by elementary examples, is a little bit challenging since the mathematical analysis turns to be quite different and much more difficult, which makes it clear that the commonly used regularizations aimed at removing the mathematical difficulties.

We shall first show that the equations of the motion should be understood as equalities between measures, so that, even in the case of an elementary system with two degrees of freedom, not any results coming from the theory of ordinary differential equations can be used to obtain the dynamics or the set of equilibrium states.

Then we shall focus on the fundamental question of the coupling between different kinds of nonlinearities when, in addition to the nonsmooth nonlinearities of contact and friction, the system involves smooth nonlinearities due for example to large deformations.

欢迎大家参加！