



深圳北理莫斯科大学

УНИВЕРСИТЕТ МГУ-ППИ В ШЭНЬЧЖЭНЕ
SHENZHEN MSU-BIT UNIVERSITY

应用数学讲座

Научный Семинар по Прикладной Математике

Research Seminar on Applied Mathematics

应用数学报告 (48)

报告人 / Докладчик / Speaker: 程晋 教授

题目 / Название / Title: The Inverse Contact Problems in Elasticity

时间 / Время / Time: 23 Jul. 2022, 10:15-10:45

地点 / Место / Venue: Zoom ID: 462 476 1414
Password: 777777

摘要 / Аннотация / Abstract:

In elasticity, the problems of describing the local stress and deformation of two contact objects under pressure are referred as contact problems. The contact problems widely appear in many branches of engineering, such as Bearing, CAM mechanism, gear, hardness tester, rolling mill roll, bridge support and rigid head etc. The contact problem used to be a very difficult problem for applied mathematicians and mechanics.

In practice, it is difficult or impossible to observe some quantities, such as the stress distribution on the contact surface and contact surface in some scenarios. Therefore, how to construct other information from the observed data on the elastic body becomes important both in theoretical and practical sense. In this talk, we will present a class of inverse problems of determining the stress distributions and contact surfaces from boundary displacement data on the non-contact domain of the elastomer. It is proved that the observed data can uniquely determine the unknown function. We show that this problem is a severely ill-posed problem. By using the method of analytic continuity, we prove that this problem has certain conditional stability, which provides a theoretical guarantee for the construction of stable numerical algorithms. At the same time, in order to obtain accurate measurement data, we propose a method of using a large amount of data in exchange for measurement accuracy.

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复旦大学数学科学学院教授。现任 Inverse Problems 等 8 种国内外学术杂志的编委，是国际反问题学会 (IIPA) 执行委员。曾任法国 Metz 大学、日本东京大学、京都大

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