复旦大学数学科学学院
数学综合报告会

报告题目：Polytope and spheres: the enumeration and reconstruction problems

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时间：2024-06-06 星期四 10:00-11:00

地点：光华东主楼1601

报告摘要：

Consider a simplicial d-polytope P or a simplicial (d-1)-sphere P with n vertices. What are the possible numbers of faces in each dimension? What partial information about P is enough to reconstruct P up to certain equivalences?

In this talk, I will introduce the theory of stress spaces developed by Lee. I will report on recent progress on conjectures of Kalai asserting that under certain conditions one can reconstruct P from the space of affine stresses of P ---- a higher-dimensional analog of the set of affine dependencies of vertices of P. This in turn leads to new results in the face enumeration of polytopes and spheres; in particular, a strengthening of (the numerical part of) the g-theorem.

Joint work with Satoshi Murai and Isabella Novik.
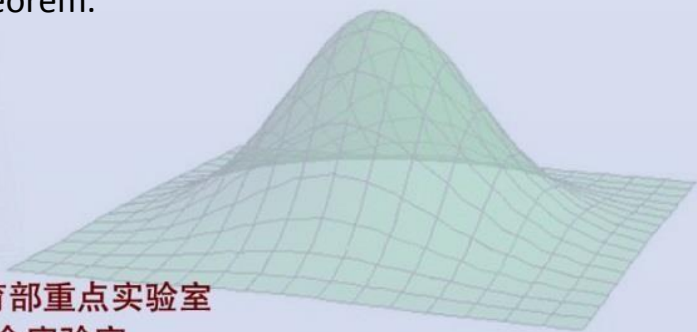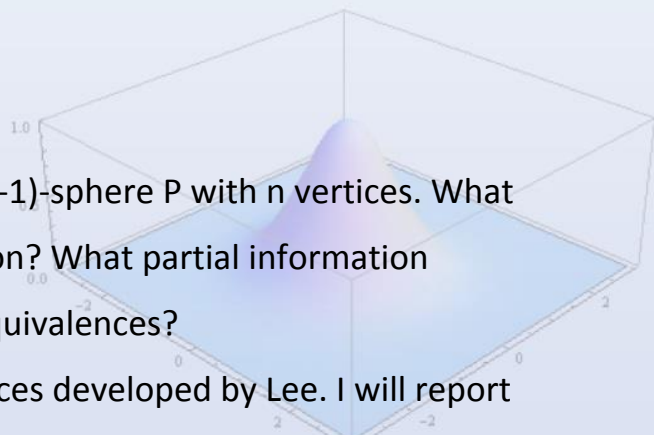
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