



## 复旦大学数学科学学院 数学综合报告会

报告题目: Mesh Generation Based on Computational Conformal Geometry

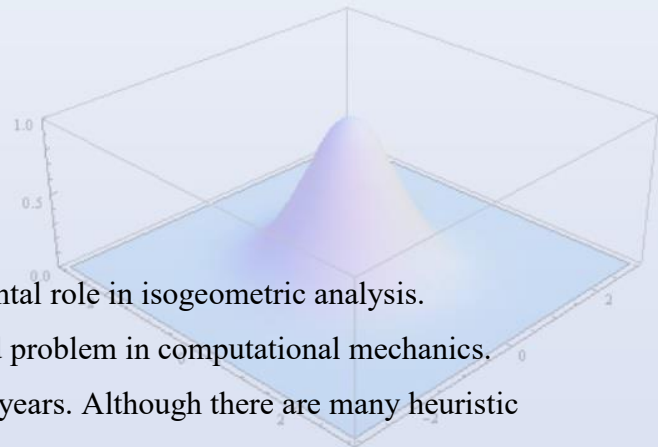
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时间: 2022-03-31 星期四 09:00 - 10:00

地点: 腾讯会议 ID: 289 354 534

报告摘要:

Generating meshes with regular structure plays a fundamental role in isogeometric analysis. Regular hexahedral mesh generation is called the holy grid problem in computational mechanics. Intensive research efforts have been spent on it for tens of years. Although there are many heuristic methods in practice, the theoretic foundation still remains widely open. Recently, we have established a theoretic framework for quadrilateral mesh generation based on conformal geometry. Basically, we have discovered the intrinsic relation between quad-meshes and meromorphic differentials on Riemann surfaces. It can answer many fundamental problems. For examples, it can show the existence of quad-meshes with special properties, estimate the dimension of quad-meshes with constraints, specify the geometric relations among the singular vertices of quad-meshes. More importantly, it gives a simple algorithm for high quality quad-mesh generation based on Abel-Jacobi theorems. Furthermore, the quad-meshes based on Strebel differential can leads to hexahedral mesh generation for volumes.



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