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动态织物与复杂模型的快速碰撞检测方法

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摘要 柔性物体因为自身的物理机械性能非常复杂，并且材料的多样性、结构的复杂性、形状的不规则性都给柔性物体的造型和运动仿真带来了很大的困难。该文中，选择常见的柔性物体织物为研究对象，以质点-弹簧模型为织物结构模型，提出了一种利用OpenGL的选择模式，快速获得织物模型上所有质点到多面体模型最短距离，从而实现织物与复杂模型之间碰撞检测的方法，该方法充分利用了图形卡硬件的管道渲染功能，可以应用于织物对任意三维多面体模型间的距离测定及碰撞检测，具有较高的通用性。

关键词 质点-弹簧模型 OpenGL选择模式 裁剪 距离计算 碰撞检测
分类号

Fast collision detection between dynamic cloth and complex models

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Abstract
Flexible objects can’t be easily sculpted and simulated，not only because the physical and mechanical properties of flexible objects are very complex，but also the variety of materials，the complexity of structures and the scrambling of shapes make troubles.This paper chooses cloths as the object for researching.Using the particle-spring model of cloths and OpenGL，one kind of fast collision detection between cloth and complex models have been achived.It makes full use of the rendering pipeline functions of graphics card and calculates the distances between cloths and 3D-Polyhedrons.This method has higher versatility.

Key words particle-spring model OpenGL selection mode clipping；distance computation collision detection

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