Hochschule Kempten
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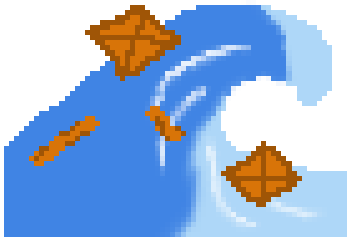
Rumble3D User Manual



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One major part of this physics engine is the detection and resolution of collisions between rigid bodies. First off all the collision detection system will be explained.

3.1 Broad phase

The broad phase takes in a number of rigid bodies and outputs a number of **CollisionPairs**. The task of the broad phase is to eliminate collision pairs, which do not collide. The generated **CollisionPairs** are only potential contacts, which means that there can be false positives. There should never be false negatives (e.g. eliminated collision pairs, that actually collide).

3.2 Intermediate phase

An intermediate phase takes in a number of **CollisionPairs** and outputs a (probably) smaller number of **CollisionPairs**. An intermediate phase behaves just like a broad phase, with the only difference being that multiple intermediate phases can be concatenated.

3.3 Narrow phase

A narrow phase takes a number of **CollisionPairs** as input and outputs a number of contacts. These contacts are then used in the collision resolution later on.

3.3.1 Collision Algorithms

	Box	**Sphere**	**Plane**
Box	Box-Box	Box-Sphere	Box-Plane
Sphere	Sphere-Box	Sphere-Sphere	Sphere-Plane
Plane	Plane-Box	Plane-Sphere	Plane-Plane

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