

9.2 Physics - Collisions

Collisions.....1

Options.....1

Soft Body and Cloth Interaction.....2

Force Field Interaction.....2

Examples.....3

Hints.....3

Collisions

Particles, Soft Bodies and Cloth objects may collide with mesh objects. Boids try to avoid Collision objects.

- The objects need to share at least one common layer to have effect.
- You may limit the effect on particles to a group of objects (in the *Field Weights panel*).
- *Deflection* for softbody objects is difficult, they often penetrate the colliding objects.
- Hair particles ignore deflecting objects (but you can animate them as softbodies which take deflection into account).

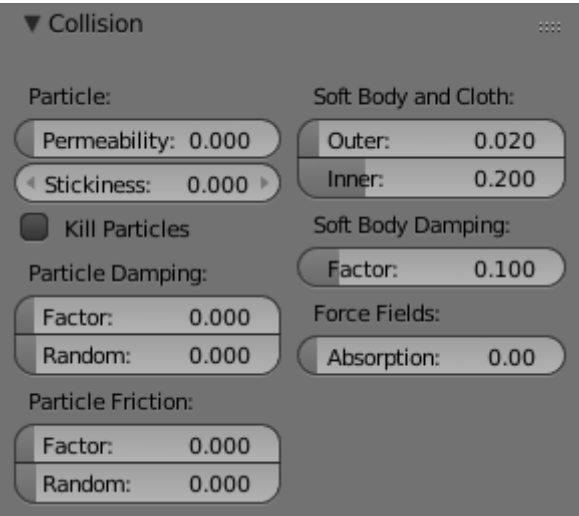
If you change the deflection settings for an object you have to recalculate the particle, softbody or cloth system (*Free Cache*), this is not done automatically. You can clear the cache for all selected objects with **Ctrl-B** → *Free cache selected*.

Reference

Mode: Object Mode

Panel: Object context → Physics sub-context → Collision

Options



Collision Panel

Permeability

Fraction of particles passing through the mesh.

Stickiness

How much particles stick to the object.

Kill Particles

Deletes Particles upon impact.

Damping Factor

Damping during a collision (independent of the velocity of the particles).

Random damping

Random variation of damping.

Friction Factor

Friction during movements along the surface.

Random friction

Random variation of friction.

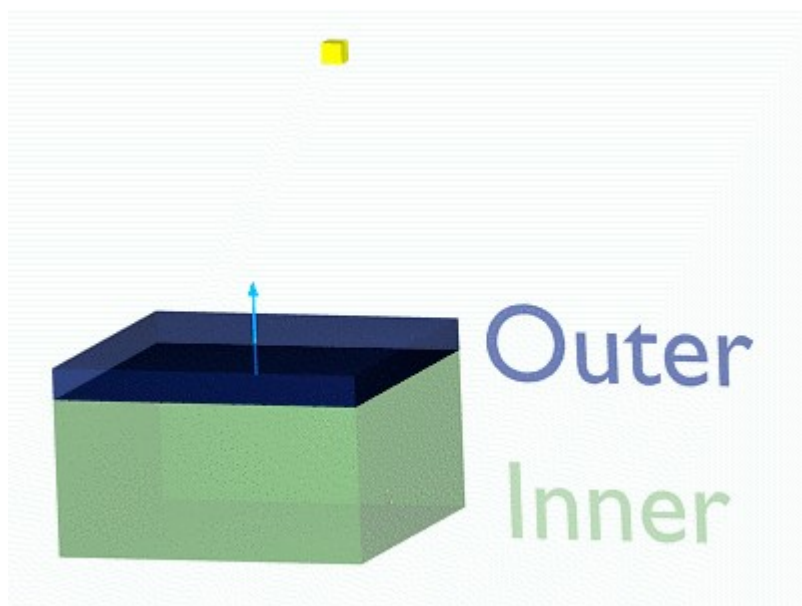


Image 1b: A softbody vertex colliding with a plane.

Soft Body and Cloth Interaction

Outer

Size of the outer collision zone.

Inner

Size of the inner collision zone (padding distance).

Outside and inside is defined by the face normal, depicted as blue arrow in (*Image 1b*).

Damping Factor

Damping during a collision.

Softbody collisions are difficult to get perfect. If one of the objects move too fast, the soft body will penetrate the mesh. See also the section about *Soft Bodies*.

Force Field Interaction

Absorption

A deflector can also deflect effectors. You can specify some collision/deflector objects which deflect a specific portion of the effector force using the *Absorption* value. 100% absorption results in no force

getting through the collision/deflector object at all. If you have 3 collision object behind each other with e.g. 10%, 43% and 3%, the absorption ends up at around 50% ($100 \times (1 - 0.1) \times (1 - 0.43) \times (1 - 0.03)$).

Examples



Deflected Particles

Here is a *Meta* object, duplivered to a particle system emitting downwards, and deflected by a mesh cube:

Hints

- Make sure that the normals of the mesh surface are facing towards the particles/points for correct deflection.
- Hair particles react directly to force fields, so if you use a force field with a short range you don't need necessarily collision.
- Hair particles avoid their emitting mesh if you edit them in *Particle* mode. So you can at least model the hair with collision.