photon

Search

This document is about: **QUANTUM 2**

SWITCH TO

Materials

Overview

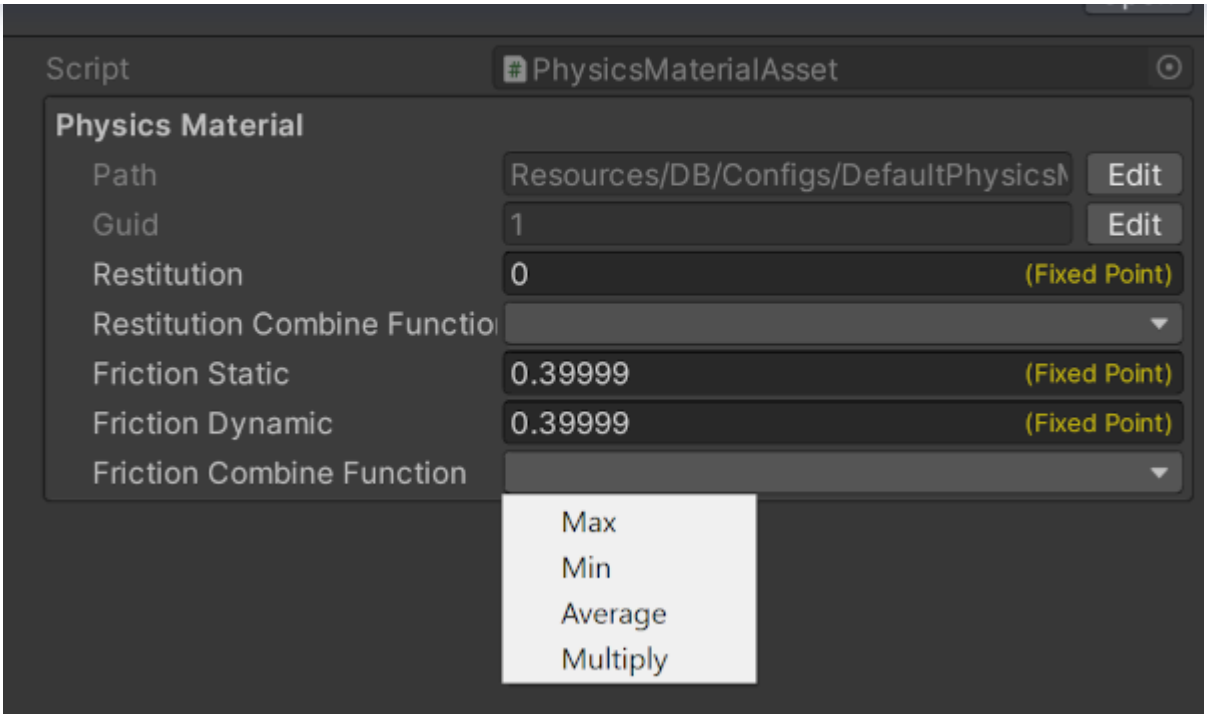
Every *PhysicsBody* requires a *PhysicsMaterial* (a quantum data-asset). The PhysicsMaterial holds properties necessary for the physics engine to resolve collisions, integration of forces and velocities.

PhysicsMaterial Data-Asset

The PhysicsMaterial holds the parameters for:

- Restitution (sometimes referred to as "bounciness", or "bounce")
- Restiution Combine Function
- Friction Static
- Friction Dynamic
- Friction Combine Function

If no *PhysicsMaterial* asset is slotted, the default physics material will be assigned; the default physics material is the one linked in the *SimulationConfig* physics settings.



Adjusting Properties to Physics Materials.

A *PhysicsMaterial* asset can be assigned to a *PhysicsCollider* directly:

C#

```
var material = f.FindAsset<PhysicsMaterial>("steel");
collider.Material = material;

f.Set(entity, collider);
```

Important Note

A *PhysicsMaterial* is a data asset and lives in the Quantum Asset Database. As assets are not part of the rollback-able game state, every *PhysicsMaterial* is therefore to be considered immutable at runtime. Changing its properties while the game running leads to non-deterministic behaviour.

*PhysicsMaterial*s follow the same rules as other data-assets.

C#

```
collider->Material.Restitution = FP._0;

// switching a reference is safe and can be rolled back:
var newMaterial = f.FindAsset<PhysicsMaterial>("ice");
collider->Material = newMaterial;
```

Combine Functions

The Combine Function used to resolve the restitution and friction for each collision manifold (a collision pair) is based on the combine functions' precedence order. The Physics system will chose the function with the highest precedent from the two colliders. The precedence order is:

1. Max
2. Min
3. Average
4. Multiply

For instance: take a collision manifold with a Collider A and Collider B. Collider A's physics material has a *Restitution Combine Function* set to **Max**, while Collider B's physics material has its set to **Average**. Since *Max* has a higher priority than *Average*, the restitution for this collision will be solved using the *Max* function.

The same logic applies to the *Friction Combine Function*.

N.B.: The *Friction Combine Function* and *Restitution Combine Function* are resolved separately and thus carry different settings.

Back to top

photon

Fusion
Quantum
Realtime
Chat
Voice
PUN

Memberships

Gaming Circle
Industries Circle

Support

Gaming Circle
Industries Circle
Circle Discord
Circle Stack Overflow

Connect

Public Discord
YouTube
Facebook
Twitter
Blog
Contact Us

Fusion
Quantum
Realtime
Chat
Voice
PUN
Bolt
Server
VR | AR | MR

Resources

Dashboard
Samples
SDK Downloads
Cloud Status

Languages

English
日本語
한국어
简体中文
繁体中文