API Collection

Force effects

Control the movement of virtual objects with forces.

Overview

Create various types of force effects, such as vortex, drag, and turbulence. Add a force effect to a scene by creating a structure that adopts `ForceEffectProtocol`, and attaching it to an entity with a `ForceEffectComponent`.

Topics

Force effect components

`struct ForceEffectComponent`

A component that defines the forces that affect an entity, including custom forces that you define.

`struct ForceEffect`

Defines a force effect's system, and type specific properties.

Built-in force effect types

`struct ConstantForceEffect`

A force effect that exerts a constant force in a direction relative to the effect's transform.

`struct ConstantRadialForceEffect`

A force effect that pulls objects toward its center with a constant strength.

`struct` **DragForceEffect**

A force effect that slows bodies within its area of effect with a force proportional to the body's velocity.

`struct` **RadialForceEffect**

A force effect that pulls objects toward its center with a spring-like (distance dependent) force.

`struct` **TurbulenceForceEffect**

A force effect that applies random forces with magnitudes proportional to each body's velocity.

`struct` **VortexForceEffect**

A force effect whose forces circulate around an axis centered at the origin of the effect.

Force effect constraints

`enum` **ForceEffectBounds**

The boundary options for a force effect.

`struct` **SpatialForceFalloff**

A type that modulates the force strength based on the distance of rigid bodies.

`struct` **TimedForceFalloff**

A type that modulates the force strength based on how long the force effect has run.

Custom forces

`protocol` **ForceEffectProtocol**

A protocol that defines a custom force effect.

`enum` **ForceMode**

The options that control how physics system applies the forces.

`struct` **ForceEffectParameters**

The force effect input data to the effect's update handler or closure.

`protocol` **ForceEffectBase**

The base protocol for the wrapping force effect structure containing common parameters for all force-effects.

See Also

Physics simulation

- Collision detection

  Determine when entities collide with each other or the environment.

- Simulations and motion

  Simulate physical interactions between entities or systems.

- Physics joints and pins

  Simulate joint physics that connect virtual objects.