

[RealityKit](#) / Physics joints and pins

API Collection

Physics joints and pins

Simulate joint physics that connect virtual objects.

Overview

In a 3D environment, you can animate various attributes of an [Entity](#), such as its location, rotation, and size from one value to another. This is ideal for simple pre-defined motion, but does not allow for interaction with external forces, such as collisions with other objects, or gestures. With a [PhysicsJoint](#) you can connect entities with pins, and RealityKit keeps your entities bound by constraints that you define.

Each joint consists of two pins, each of which belongs to a different entity. Each [GeometricPin](#) moves and rotates relative to each other within the bounds of the joint's constraints.

Topics

Pin and joint components

`{}` Simulating physics joints in your RealityKit app
Create realistic, connected motion using physics joints.

`struct` `GeometricPin`

A structure that identifies a local transform relative to an entity or entity's animating skeletal joint.

`struct` `GeometricPinsComponent`

A component that stores a sequence of geometric pins.

`protocol PhysicsJoint`

A type that describes physics joints.

`struct PhysicsJointsComponent`

A component that stores physics joints which RealityKit simulates.

`struct EntityGeometricPins`

A structure that wraps all geometric pins an entity owns.

`struct AttachedTransformComponent`

A component that stores an optional source pin owned by this entity and a target pin which this entity is attached to

Built-in joint types

`struct PhysicsRevoluteJoint`

A joint that allows one degree of rotational freedom between two entity pins, similar to a door swinging on its hinges.

`struct PhysicsPrismaticJoint`

A joint that allows movement along a straight line, similar to a sliding drawer.

`struct PhysicsSphericalJoint`

A spherical joint that allows free rotational movement between two entities' pins.

`struct PhysicsCustomJoint`

A joint with six degrees of freedom that can be individually specified.

`struct PhysicsDistanceJoint`

A joint that maintains a minimum and maximum distance between two entity pins.

`struct PhysicsFixedJoint`

A joint that rigidly connects two entity pins, with zero degrees of freedom.

`struct PhysicsJoints`

A collection of physics joints.

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.

☰ Force effects

Control the movement of virtual objects with forces.