

# GazeboMessages

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## Chapter 1

# Gazebo Messages Reference

Gazebo uses Google Protobufs for message specification and serialization.

Messages Definitions



## Chapter 2

# Class Index

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## Chapter 4

# Class Documentation

### 4.1 Axis Interface Reference

msgs::Joint axis message

#### 4.1.1 Detailed Description

msgs::Joint axis message

The documentation for this interface was generated from the following file:

- **axis.proto**

### 4.2 BoxGeom Interface Reference

Information about a box geometry.

#### 4.2.1 Detailed Description

Information about a box geometry.

The documentation for this interface was generated from the following file:

- **boxgeom.proto**

### 4.3 CameraSensor Interface Reference

Information about a camera sensor element.

#### 4.3.1 Detailed Description

Information about a camera sensor element.

The documentation for this interface was generated from the following file:

- **camerasensor.proto**

## 4.4 Collision Interface Reference

Information about a collision element.

### 4.4.1 Detailed Description

Information about a collision element.

The documentation for this interface was generated from the following file:

- **collision.proto**

## 4.5 Color Interface Reference

**Color** (p. 10) message.

### 4.5.1 Detailed Description

**Color** (p. 10) message.

The documentation for this interface was generated from the following file:

- **color.proto**

## 4.6 Contact Interface Reference

**Contact** (p. 10) message for passing info between two entities.

### 4.6.1 Detailed Description

**Contact** (p. 10) message for passing info between two entities.

The documentation for this interface was generated from the following file:

- **contact.proto**

## 4.7 Contacts Interface Reference

**Contacts** (p. 10) from collision detection.

### 4.7.1 Detailed Description

**Contacts** (p. 10) from collision detection.

The documentation for this interface was generated from the following file:

- **contacts.proto**

## 4.8 ContactSensor Interface Reference

Information about a contact sensor element.

### 4.8.1 Detailed Description

Information about a contact sensor element.

The documentation for this interface was generated from the following file:

- **contactsensor.proto**

## 4.9 CylinderGeom Interface Reference

Information about a cylinder geometry.

### 4.9.1 Detailed Description

Information about a cylinder geometry.

The documentation for this interface was generated from the following file:

- **cylindergeom.proto**

## 4.10 Diagnostic Interface Reference

**Diagnostic** (p. 11) information about a running instance of Gazebo.

### 4.10.1 Detailed Description

**Diagnostic** (p. 11) information about a running instance of Gazebo.

Gazebo must have been compiled with the `ENABLE_DIAGNOSTICS` flag.

The documentation for this interface was generated from the following file:

- **diagnostics.proto**

## 4.11 Entities Interface Reference

Information about all entities in a world.

### 4.11.1 Detailed Description

Information about all entities in a world.

The documentation for this interface was generated from the following file:

- **model\_v.proto**

## 4.12 Factory Interface Reference

Message to create new model in gazebo.

### 4.12.1 Detailed Description

Message to create new model in gazebo.

The documentation for this interface was generated from the following file:

- **factory.proto**

## 4.13 Fog Interface Reference

Message for fog data.

### 4.13.1 Detailed Description

Message for fog data.

The documentation for this interface was generated from the following file:

- **fog.proto**

## 4.14 ForceTorque Interface Reference

**ForceTorque** (p. 12) from constraint solving.

### 4.14.1 Detailed Description

**ForceTorque** (p. 12) from constraint solving.

The documentation for this interface was generated from the following file:

- **joint\_wrench\_stamped.proto**

## 4.15 Frction Interface Reference

Information about friction.

### 4.15.1 Detailed Description

Information about friction.

The documentation for this interface was generated from the following file:

- **friction.proto**

## 4.16 Geometry Interface Reference

Information about a geometry element.

### 4.16.1 Detailed Description

Information about a geometry element.

The documentation for this interface was generated from the following file:

- **geometry.proto**

## 4.17 GUI Interface Reference

Message for a **GUI** (p. 13).

### 4.17.1 Detailed Description

Message for a **GUI** (p. 13).

The documentation for this interface was generated from the following file:

- **gui.proto**

## 4.18 GUICamera Interface Reference

Message for a **GUI** (p. 13) Camera.

### 4.18.1 Detailed Description

Message for a **GUI** (p. 13) Camera.

The documentation for this interface was generated from the following file:

- **gui\_camera.proto**

## 4.19 GUIOverlayConfig Interface Reference

Message for a gui overlay configuration.

### 4.19.1 Detailed Description

Message for a gui overlay configuration.

The documentation for this interface was generated from the following file:

- **gui\_overlay\_config.proto**

## 4.20 GzString Interface Reference

A message for string data.

### 4.20.1 Detailed Description

A message for string data.

The documentation for this interface was generated from the following file:

- **gz\_string.proto**

## 4.21 GzString\_V Interface Reference

A message for a vector of string data.

### 4.21.1 Detailed Description

A message for a vector of string data.

The documentation for this interface was generated from the following file:

- **gz\_string\_v.proto**

## 4.22 Header Interface Reference

General information included by many messages.

### 4.22.1 Detailed Description

General information included by many messages.

The documentation for this interface was generated from the following file:

- **header.proto**



## 4.23 HeightmapGeom Interface Reference

Message for a heightmap geometry.

### 4.23.1 Detailed Description

Message for a heightmap geometry.

The documentation for this interface was generated from the following file:

- **heightmapgeom.proto**

## 4.24 Image Interface Reference

Message for an image.

### 4.24.1 Detailed Description

Message for an image.

The documentation for this interface was generated from the following file:

- **image.proto**

## 4.25 ImageGeom Interface Reference

Message for a image geometry.

### 4.25.1 Detailed Description

Message for a image geometry.

The documentation for this interface was generated from the following file:

- **imagegeom.proto**

## 4.26 ImagesStamped Interface Reference

Message for a multiple image with a time.

### 4.26.1 Detailed Description

Message for a multiple image with a time.

The documentation for this interface was generated from the following file:

- **images\_stamped.proto**

## 4.27 ImageStamped Interface Reference

Message for an image with a time.

### 4.27.1 Detailed Description

Message for an image with a time.

The documentation for this interface was generated from the following file:

- **image\_stamped.proto**

## 4.28 IMU Interface Reference

Data from an **IMU** (p. 16) sensor.

### 4.28.1 Detailed Description

Data from an **IMU** (p. 16) sensor.

The documentation for this interface was generated from the following file:

- **imu.proto**

## 4.29 Inertial Interface Reference

Information about inertia.

### 4.29.1 Detailed Description

Information about inertia.

The documentation for this interface was generated from the following file:

- **inertial.proto**

## 4.30 Int Interface Reference

Integer message.

### 4.30.1 Detailed Description

Integer message.

The documentation for this interface was generated from the following file:

- **int.proto**

## 4.31 Joint Interface Reference

Message for creating joint in rendering::Scene.

### 4.31.1 Detailed Description

Message for creating joint in rendering::Scene.

**Joint** (p. 17) wrench message.

The documentation for this interface was generated from the following file:

- **joint.proto**

## 4.32 JointAnimation Interface Reference

Message for a model joint animation, does not appear to be used.

### 4.32.1 Detailed Description

Message for a model joint animation, does not appear to be used.

The documentation for this interface was generated from the following file:

- **joint\_animation.proto**

## 4.33 JointCmd Interface Reference

Message for joint command, used by physics::JointControlWidget.

### 4.33.1 Detailed Description

Message for joint command, used by physics::JointControlWidget.

The documentation for this interface was generated from the following file:

- **joint\_cmd.proto**

## 4.34 LaserScan Interface Reference

Data from a laser scan.

### 4.34.1 Detailed Description

Data from a laser scan.

The documentation for this interface was generated from the following file:

- **laserscan.proto**

## 4.35 LaserStamped Interface Reference

Message for an laser scan with a time.

### 4.35.1 Detailed Description

Message for an laser scan with a time.

The documentation for this interface was generated from the following file:

- **laserscan\_stamped.proto**

## 4.36 Light Interface Reference

Message for a light.

### 4.36.1 Detailed Description

Message for a light.

The documentation for this interface was generated from the following file:

- **light.proto**

## 4.37 Link Interface Reference

Information about a link.

### 4.37.1 Detailed Description

Information about a link.

The documentation for this interface was generated from the following file:

- **link.proto**

## 4.38 LogControl Interface Reference

A message that allows for control of logging functions.

#### 4.38.1 Detailed Description

A message that allows for control of logging functions.

The documentation for this interface was generated from the following file:

- **log\_control.proto**

### 4.39 LogStatus Interface Reference

A message that contains information about data logging.

#### 4.39.1 Detailed Description

A message that contains information about data logging.

The documentation for this interface was generated from the following file:

- **log\_status.proto**

### 4.40 Material Interface Reference

Information about a material.

#### 4.40.1 Detailed Description

Information about a material.

The documentation for this interface was generated from the following file:

- **material.proto**

### 4.41 MeshGeom Interface Reference

Message for a mesh geometry.

#### 4.41.1 Detailed Description

Message for a mesh geometry.

The documentation for this interface was generated from the following file:

- **meshgeom.proto**

### 4.42 Model Interface Reference

Information about a model.

#### 4.42.1 Detailed Description

Information about a model.

The documentation for this interface was generated from the following file:

- **model.proto**

### 4.43 ModelConfiguration Interface Reference

Message for model configuration (joint positions)

#### 4.43.1 Detailed Description

Message for model configuration (joint positions)

The documentation for this interface was generated from the following file:

- **model\_configuration.proto**

### 4.44 Packet Interface Reference

Message that encapsulates another message with a type description.

#### 4.44.1 Detailed Description

Message that encapsulates another message with a type description.

The documentation for this interface was generated from the following file:

- **packet.proto**

### 4.45 Physics Interface Reference

A message containing a description of the global physics properties.

#### 4.45.1 Detailed Description

A message containing a description of the global physics properties.

The documentation for this interface was generated from the following file:

- **physics.proto**

### 4.46 PID Interface Reference

Message for simple **PID** (p. 20) controllers.

#### 4.46.1 Detailed Description

Message for simple **PID** (p. 20) controllers.

The documentation for this interface was generated from the following file:

- **pid.proto**

### 4.47 PlaneGeom Interface Reference

Message for a plane geometry.

#### 4.47.1 Detailed Description

Message for a plane geometry.

The documentation for this interface was generated from the following file:

- **planegeom.proto**

### 4.48 Plugin Interface Reference

A message containing visual information for gazebo::Plugin.

#### 4.48.1 Detailed Description

A message containing visual information for gazebo::Plugin.

The documentation for this interface was generated from the following file:

- **plugin.proto**

### 4.49 Pose Interface Reference

Message for a pose.

#### 4.49.1 Detailed Description

Message for a pose.

Message for a vector of poses.

The documentation for this interface was generated from the following file:

- **pose.proto**

## 4.50 PoseAnimation Interface Reference

Message for a model pose animation.

### 4.50.1 Detailed Description

Message for a model pose animation.

The documentation for this interface was generated from the following file:

- **pose\_animation.proto**

## 4.51 PoseStamped Interface Reference

Message for a pose with a time.

### 4.51.1 Detailed Description

Message for a pose with a time.

The documentation for this interface was generated from the following file:

- **pose\_stamped.proto**

## 4.52 PoseTrajectory Interface Reference

Message for a pose trajectory.

### 4.52.1 Detailed Description

Message for a pose trajectory.

The documentation for this interface was generated from the following file:

- **pose\_trajectory.proto**

## 4.53 Projector Interface Reference

Information about a projector.

### 4.53.1 Detailed Description

Information about a projector.

The documentation for this interface was generated from the following file:

- **projector.proto**



## 4.54 Publish Interface Reference

Message that contains information about a publisher of data.

### 4.54.1 Detailed Description

Message that contains information about a publisher of data.

The documentation for this interface was generated from the following file:

- **publish.proto**

## 4.55 Publishers Interface Reference

A list of publishers.

### 4.55.1 Detailed Description

A list of publishers.

The documentation for this interface was generated from the following file:

- **publishers.proto**

## 4.56 Quaternion Interface Reference

A message for a quaternion.

### 4.56.1 Detailed Description

A message for a quaternion.

The documentation for this interface was generated from the following file:

- **quaternion.proto**

## 4.57 RaySensor Interface Reference

Information about a ray sensor element.

### 4.57.1 Detailed Description

Information about a ray sensor element.

The documentation for this interface was generated from the following file:

- **raysensor.proto**

## 4.58 Request Interface Reference

A message containing a string request.

### 4.58.1 Detailed Description

A message containing a string request.

The documentation for this interface was generated from the following file:

- **request.proto**

## 4.59 Response Interface Reference

Message that encapsulates a respons message with a type description.

### 4.59.1 Detailed Description

Message that encapsulates a respons message with a type description.

The documentation for this interface was generated from the following file:

- **response.proto**

## 4.60 Road Interface Reference

Message for a road.

### 4.60.1 Detailed Description

Message for a road.

The documentation for this interface was generated from the following file:

- **road.proto**

## 4.61 Scene Interface Reference

A message containing a description of a scene.

### 4.61.1 Detailed Description

A message containing a description of a scene.

The documentation for this interface was generated from the following file:

- **scene.proto**

## 4.62 Selection Interface Reference

A message for **GUI** (p. 13) selection data.

### 4.62.1 Detailed Description

A message for **GUI** (p. 13) selection data.

The documentation for this interface was generated from the following file:

- **selection.proto**

## 4.63 Sensor Interface Reference

Information about a sensor element.

### 4.63.1 Detailed Description

Information about a sensor element.

The documentation for this interface was generated from the following file:

- **sensor.proto**

## 4.64 ServerControl Interface Reference

A message that allows for control of the server functions.

### 4.64.1 Detailed Description

A message that allows for control of the server functions.

The documentation for this interface was generated from the following file:

- **server\_control.proto**

## 4.65 Shadows Interface Reference

A message for shadow data.

### 4.65.1 Detailed Description

A message for shadow data.

The documentation for this interface was generated from the following file:

- **shadows.proto**

## 4.66 Sky Interface Reference

Information about the sky.

### 4.66.1 Detailed Description

Information about the sky.

The documentation for this interface was generated from the following file:

- **sky.proto**

## 4.67 SphereGeom Interface Reference

Information about a sphere geometry.

### 4.67.1 Detailed Description

Information about a sphere geometry.

The documentation for this interface was generated from the following file:

- **spheregeom.proto**

## 4.68 Subscribe Interface Reference

A message for subscription data.

### 4.68.1 Detailed Description

A message for subscription data.

The documentation for this interface was generated from the following file:

- **subscribe.proto**

## 4.69 Surface Interface Reference

Information about a surface element.

### 4.69.1 Detailed Description

Information about a surface element.

The documentation for this interface was generated from the following file:

- **surface.proto**

## 4.70 Test Interface Reference

A test message.

### 4.70.1 Detailed Description

A test message.

The documentation for this interface was generated from the following file:

- **test.proto**

## 4.71 Time Interface Reference

A message for time data.

### 4.71.1 Detailed Description

A message for time data.

The documentation for this interface was generated from the following file:

- **time.proto**

## 4.72 TopicInfo Interface Reference

A message for topic information.

### 4.72.1 Detailed Description

A message for topic information.

The documentation for this interface was generated from the following file:

- **topic\_info.proto**

## 4.73 Trackvisual Interface Reference

Message for a tracking a rendering::Visual with a rendering::Camera.

### 4.73.1 Detailed Description

Message for a tracking a rendering::Visual with a rendering::Camera.

The documentation for this interface was generated from the following file:

- **track\_visual.proto**

## 4.74 Vector2d Interface Reference

Message for a vector2 double.

### 4.74.1 Detailed Description

Message for a vector2 double.

The documentation for this interface was generated from the following file:

- **vector2d.proto**

## 4.75 Vector3d Interface Reference

Message for a vector3 double.

### 4.75.1 Detailed Description

Message for a vector3 double.

The documentation for this interface was generated from the following file:

- **vector3d.proto**

## 4.76 Visual Interface Reference

A message containing visual information for rendering::Visual.

### 4.76.1 Detailed Description

A message containing visual information for rendering::Visual.

The documentation for this interface was generated from the following file:

- **visual.proto**

## 4.77 WorldControl Interface Reference

A message that allows for control of world functions.

### 4.77.1 Detailed Description

A message that allows for control of world functions.

The documentation for this interface was generated from the following file:

- **world\_control.proto**

## 4.78 WorldModify Interface Reference

A message that allows for modifying (open, close) worlds.

### 4.78.1 Detailed Description

A message that allows for modifying (open, close) worlds.

The documentation for this interface was generated from the following file:

- **world\_modify.proto**

## 4.79 WorldReset Interface Reference

A message that controls how the world is reset.

### 4.79.1 Detailed Description

A message that controls how the world is reset.

The documentation for this interface was generated from the following file:

- **world\_reset.proto**

## 4.80 WorldStatistics Interface Reference

A message statistics about a world.

### 4.80.1 Detailed Description

A message statistics about a world.

The documentation for this interface was generated from the following file:

- **world\_stats.proto**





# Chapter 5

## File Documentation

### 5.1 axis.proto File Reference

#### Variables

- message **Axis**
- required double **damping** = 6
- required double **friction** = 7
- required double **limit\_effort** = 4
- required double **limit\_lower** = 2
- required double **limit\_upper** = 3
- required double **limit\_velocity** = 5
- package gazebo **msgs**
- import vector3d **proto**

#### 5.1.1 Variable Documentation

##### 5.1.1.1 message Axis

###### Initial value:

```
{  
  required Vector3d xyz = 1
```

##### 5.1.1.2 required double damping = 6

##### 5.1.1.3 required double friction = 7

##### 5.1.1.4 required double limit\_effort = 4

##### 5.1.1.5 required double limit\_lower = 2

##### 5.1.1.6 required double limit\_upper = 3

##### 5.1.1.7 required double limit\_velocity = 5

5.1.1.8 package gazebo msgs

5.1.1.9 import time proto

## 5.2 boxgeom.proto File Reference

### Variables

- message **BoxGeom**
- package gazebo **msgs**
- import vector3d **proto**

### 5.2.1 Variable Documentation

5.2.1.1 message **BoxGeom**

#### Initial value:

```
{  
  required Vector3d size = 1
```

5.2.1.2 package gazebo msgs

5.2.1.3 import vector3d proto

## 5.3 camerasensor.proto File Reference

### Variables

- message **CameraSensor**
- optional double **far\_clip** = 5
- optional string **image\_format** = 3
- optional **Vector2d image\_size** = 2
- package gazebo **msgs**
- optional double **near\_clip** = 4
- import vector2d **proto**
- optional bool **save\_enabled** = 6
- optional string **save\_path** = 7

### 5.3.1 Variable Documentation

5.3.1.1 message **CameraSensor**

#### Initial value:

```
{  
  optional double horizontal_fov = 1
```

5.3.1.2 optional double far\_clip = 5

5.3.1.3 optional string image\_format = 3

5.3.1.4 optional Vector2d image\_size = 2

5.3.1.5 package gazebo msgs

5.3.1.6 optional double near\_clip = 4

5.3.1.7 import vector2d proto

5.3.1.8 optional bool save\_enabled = 6

5.3.1.9 optional string save\_path = 7

## 5.4 collision.proto File Reference

### Variables

- message **Collision**
- optional **Geometry geometry** = 6
- optional double **laser\_retro** = 3
- optional double **max\_contacts** = 4
- package gazebo **msgs**
- required string **name** = 2
- optional **Pose pose** = 5
- import header **proto**
- optional **Surface surface** = 7
- repeated **Visual visual** = 8

### 5.4.1 Variable Documentation

#### 5.4.1.1 message Collision

##### Initial value:

```
{  
  required uint32 id = 1
```

5.4.1.2 optional **Geometry geometry** = 6

5.4.1.3 optional double **laser\_retro** = 3

5.4.1.4 optional double **max\_contacts** = 4

5.4.1.5 package gazebo **msgs**

5.4.1.6 required string **name** = 2

5.4.1.7 optional Pose pose = 5

5.4.1.8 import visual proto

5.4.1.9 optional Surface surface = 7

5.4.1.10 repeated Visual visual = 8

## 5.5 color.proto File Reference

### Variables

- optional float **a** = 5 [default = 1.0]
- required float **b** = 4
- message **Color**
- required float **g** = 3
- package gazebo **msgs**

### 5.5.1 Variable Documentation

5.5.1.1 optional float a = 5 [default = 1.0]

5.5.1.2 required float b = 4

5.5.1.3 message Color

#### Initial value:

```
{  
  required float r = 2
```

5.5.1.4 required float g = 3

5.5.1.5 package gazebo msgs

## 5.6 contact.proto File Reference

### Variables

- required string **collision2** = 2
- message **Contact**
- repeated double **depth** = 5
- package gazebo **msgs**
- repeated **Vector3d** **normal** = 4
- repeated **Vector3d** **position** = 3
- import vector3d **proto**
- required **Time** **time** = 7
- repeated **JointWrench** **wrench** = 6

## 5.6.1 Variable Documentation

5.6.1.1 required string collision2 = 2

5.6.1.2 message Contact

**Initial value:**

```
{  
  required string collision1 = 1
```

5.6.1.3 repeated double depth = 5

5.6.1.4 package gazebo msgs

5.6.1.5 repeated Vector3d normal = 4

5.6.1.6 repeated Vector3d position = 3

5.6.1.7 import joint\_wrench proto

5.6.1.8 required Time time = 7

5.6.1.9 repeated JointWrench wrench = 6

## 5.7 contacts.proto File Reference

### Variables

- message **Contacts**
- package gazebo **msgs**
- import **contact proto**
- required **Time time** = 2

## 5.7.1 Variable Documentation

5.7.1.1 message Contacts

**Initial value:**

```
{  
  repeated Contact contact = 1
```

5.7.1.2 package gazebo msgs

5.7.1.3 import time proto

5.7.1.4 required Time time = 2

## 5.8 contactsensor.proto File Reference

### Variables

- message **ContactSensor**
- package gazebo **msgs**

### 5.8.1 Variable Documentation

#### 5.8.1.1 message ContactSensor

##### Initial value:

```
{  
  optional string collision_name = 1
```

#### 5.8.1.2 package gazebo msgs

## 5.9 cylindergeom.proto File Reference

### Variables

- message **CylinderGeom**
- required double **length** = 2
- package gazebo **msgs**

### 5.9.1 Variable Documentation

#### 5.9.1.1 message CylinderGeom

##### Initial value:

```
{  
  required double radius = 1
```

#### 5.9.1.2 required double length = 2

#### 5.9.1.3 package gazebo msgs

## 5.10 diagnostics.proto File Reference

### Variables

- message **Diagnostics**
- package gazebo **msgs**
- import **time proto**
- required **Time real\_time** = 2
- required double **real\_time\_factor** = 4
- required **Time sim\_time** = 3

## 5.10.1 Variable Documentation

### 5.10.1.1 message Diagnostics

#### Initial value:

```
{
  message DiagTime
  {
    required string name = 1;
    required Time elapsed = 2;
    required Time wall = 3;
  }

  repeated DiagTime time = 1
```

### 5.10.1.2 package gazebo msgs

### 5.10.1.3 import time proto

### 5.10.1.4 required Time real\_time = 2

### 5.10.1.5 required double real\_time\_factor = 4

### 5.10.1.6 required Time sim\_time = 3

## 5.11 factory.proto File Reference

### Variables

- optional string **clone\_model\_name** = 5
- optional string **edit\_name** = 4
- message **Factory**
- package gazebo **msgs**
- optional **Pose pose** = 3
- import header **proto**
- optional string **sdf\_filename** = 2

## 5.11.1 Variable Documentation

### 5.11.1.1 optional string clone\_model\_name = 5

### 5.11.1.2 optional string edit\_name = 4

### 5.11.1.3 message Factory

#### Initial value:

```
{
  optional string sdf = 1
```

5.11.1.4 package gazebo msgs

5.11.1.5 optional Pose pose = 3

5.11.1.6 import pose proto

5.11.1.7 optional string sdf\_filename = 2

## 5.12 fog.proto File Reference

### Variables

- optional **Color** color = 2
- optional float **density** = 3
- optional float **end** = 5
- message **Fog**
- package gazebo **msgs**
- import **color proto**
- optional float **start** = 4

### 5.12.1 Variable Documentation

5.12.1.1 optional Color color = 2

5.12.1.2 optional float density = 3

5.12.1.3 optional float end = 5

5.12.1.4 message Fog

#### Initial value:

```
{
  enum FogType
  {
    NONE          = 1;
    LINEAR        = 2;
    EXPONENTIAL   = 3;
    EXPONENTIAL2  = 4;
  }
  optional FogType type = 1
}
```

5.12.1.5 package gazebo msgs

5.12.1.6 import color proto

5.12.1.7 optional float start = 4

## 5.13 friction.proto File Reference

### Variables

- optional **Vector3d** fdir1 = 3



- message **Friction**
- package gazebo **msgs**
- optional double **mu2** = 2
- import vector3d **proto**
- optional double **slip1** = 4
- optional double **slip2** = 5

### 5.13.1 Variable Documentation

5.13.1.1 optional Vector3d fdir1 = 3

5.13.1.2 message Friction

**Initial value:**

```
{
  optional double mu = 1
```

5.13.1.3 package gazebo msgs

5.13.1.4 optional double mu2 = 2

5.13.1.5 import vector3d proto

5.13.1.6 optional double slip1 = 4

5.13.1.7 optional double slip2 = 5

## 5.14 geometry.proto File Reference

### Variables

- optional **BoxGeom box** = 2
- optional **CylinderGeom cylinder** = 3
- message **Geometry**
- optional **HeightmapGeom heightmap** = 7
- optional **ImageGeom image** = 6
- optional **MeshGeom mesh** = 8
- package gazebo **msgs**
- optional **PlaneGeom plane** = 4
- repeated **Vector3d points** = 9
- import boxgeom **proto**
- optional **SphereGeom sphere** = 5

## 5.14.1 Variable Documentation

5.14.1.1 optional **BoxGeom** box = 2

5.14.1.2 optional **CylinderGeom** cylinder = 3

5.14.1.3 message **Geometry**

**Initial value:**

```
{
  enum Type
  {
    BOX           = 1;
    CYLINDER     = 2;
    SPHERE       = 3;
    PLANE        = 4;
    IMAGE        = 5;
    HEIGHTMAP    = 6;
    MESH         = 7;
    TRIANGLE_FAN = 8;
    LINE_STRIP   = 9;
    EMPTY        = 10;
  }

  optional Type type = 1
```

5.14.1.4 optional **HeightmapGeom** heightmap = 7

5.14.1.5 optional **ImageGeom** image = 6

5.14.1.6 optional **MeshGeom** mesh = 8

5.14.1.7 package gazebo **msgs**

5.14.1.8 optional **PlaneGeom** plane = 4

5.14.1.9 repeated **Vector3d** points = 9

5.14.1.10 import vector3d **proto**

5.14.1.11 optional **SphereGeom** sphere = 5

## 5.15 gui.proto File Reference

### Variables

- optional **GUICamera** camera = 2
- message **GUI**
- package gazebo **msgs**
- import gui\_camera **proto**

### 5.15.1 Variable Documentation

5.15.1.1 optional GUICamera camera = 2

5.15.1.2 message GUI

**Initial value:**

```
{
  optional bool fullscreen = 1
```

5.15.1.3 package gazebo msgs

5.15.1.4 import gui\_camera proto

## 5.16 gui\_camera.proto File Reference

### Variables

- message **GUICamera**
- package gazebo **msgs**
- optional **Pose pose** = 3
- import **pose proto**
- optional **TrackVisual track** = 4
- optional string **view\_controller** = 2

### 5.16.1 Variable Documentation

5.16.1.1 message GUICamera

**Initial value:**

```
{
  required string name = 1
```

5.16.1.2 package gazebo msgs

5.16.1.3 optional Pose pose = 3

5.16.1.4 import track\_visual proto

5.16.1.5 optional TrackVisual track = 4

5.16.1.6 optional string view\_controller = 2

## 5.17 gui\_overlay\_config.proto File Reference

### Variables

- message **GUIOverlayConfig**
- package gazebo **msgs**

## 5.17.1 Variable Documentation

### 5.17.1.1 message GUIOverlayConfig

#### Initial value:

```
{  
  required string layout_filename = 1
```

### 5.17.1.2 package gazebo msgs

## 5.18 gz\_string.proto File Reference

### Variables

- message **GzString**
- package gazebo **msgs**

## 5.18.1 Variable Documentation

### 5.18.1.1 message GzString

#### Initial value:

```
{  
  required string data = 1
```

### 5.18.1.2 package gazebo msgs

## 5.19 gz\_string\_v.proto File Reference

### Variables

- message **GzString\_V**
- package gazebo **msgs**

## 5.19.1 Variable Documentation

### 5.19.1.1 message GzString\_V

#### Initial value:

```
{  
  repeated string data = 1
```

5.19.1.2 package gazebo msgs

## 5.20 header.proto File Reference

### Variables

- message **Header**
- optional int32 **index** = 3
- package gazebo **msgs**
- import **time proto**
- optional **Time stamp** = 2

### 5.20.1 Variable Documentation

5.20.1.1 message Header

#### Initial value:

```
{  
  optional string str_id = 1
```

5.20.1.2 optional int32 index = 3

5.20.1.3 package gazebo msgs

5.20.1.4 import time proto

5.20.1.5 optional Time stamp = 2

## 5.21 heightmapgeom.proto File Reference

### Variables

- message **Blend**
- repeated **Blend blend** = 5
- required double **fade\_dist** = 2
- message **HeightmapGeom**
- package gazebo **msgs**
- required string **normal** = 2
- optional **Vector3d origin** = 3
- import **image proto**
- required **Vector3d size** = 2
- message **Texture**
- repeated **Texture texture** = 4

## 5.21.1 Variable Documentation

### 5.21.1.1 message Blend

#### Initial value:

```
{
  required double min_height = 1
```

### 5.21.1.2 repeated Blend blend = 5

### 5.21.1.3 required double fade.dist = 2

### 5.21.1.4 message HeightmapGeom

#### Initial value:

```
{
  required Image image = 1
```

### 5.21.1.5 package gazebo msgs

### 5.21.1.6 required string normal = 2

### 5.21.1.7 optional Vector3d origin = 3

### 5.21.1.8 import vector3d proto

### 5.21.1.9 required double size = 2

### 5.21.1.10 message Texture

#### Initial value:

```
{
  required string diffuse = 1
```

### 5.21.1.11 repeated Texture texture = 4

## 5.22 image.proto File Reference

### Variables

- required bytes **data** = 5
- required uint32 **height** = 2
- message **Image**
- package gazebo **msgs**
- required uint32 **pixel\_format** = 3
- required uint32 **step** = 4

### 5.22.1 Variable Documentation

5.22.1.1 required bytes data = 5

5.22.1.2 required uint32 height = 2

5.22.1.3 message Image

**Initial value:**

```
{  
  required uint32 width = 1
```

5.22.1.4 package gazebo msgs

5.22.1.5 required uint32 pixel\_format = 3

5.22.1.6 required uint32 step = 4

## 5.23 image\_stamped.proto File Reference

### Variables

- required **Image image** = 2
- message **ImageStamped**
- package gazebo **msgs**
- import **time proto**

### 5.23.1 Variable Documentation

5.23.1.1 required Image image = 2

5.23.1.2 message ImageStamped

**Initial value:**

```
{  
  required Time time = 1
```

5.23.1.3 package gazebo msgs

5.23.1.4 import image proto

## 5.24 imagegeom.proto File Reference

### Variables

- optional int32 **granularity** = 5

- optional double **height** = 4
- message **ImageGeom**
- package gazebo **msgs**
- optional double **scale** = 2
- optional int32 **threshold** = 3 [default = 255]

### 5.24.1 Variable Documentation

5.24.1.1 optional int32 granularity = 5

5.24.1.2 optional double height = 4

5.24.1.3 message ImageGeom

**Initial value:**

```
{
  required string uri          = 1
```

5.24.1.4 package gazebo msgs

5.24.1.5 optional double scale = 2

5.24.1.6 optional int32 threshold = 3 [default = 255]

## 5.25 images\_stamped.proto File Reference

### Variables

- repeated **Image image** = 2
- message **ImagesStamped**
- package gazebo **msgs**
- import **time proto**

### 5.25.1 Variable Documentation

5.25.1.1 repeated Image image = 2

5.25.1.2 message ImagesStamped

**Initial value:**

```
{
  required Time time          = 1
```



5.25.1.3 package gazebo msgs

5.25.1.4 import image proto

## 5.26 imu.proto File Reference

### Variables

- required **Vector3d** **angular\_velocity** = 4
- required string **entity\_name** = 2
- message **IMU**
- required **Vector3d** **linear\_acceleration** = 5
- package gazebo **msgs**
- required **Quaternion** **orientation** = 3
- import **time** **proto**

### 5.26.1 Variable Documentation

5.26.1.1 required **Vector3d** **angular\_velocity** = 4

5.26.1.2 required string **entity\_name** = 2

5.26.1.3 message **IMU**

#### Initial value:

```
{
  required Time stamp           = 1
```

5.26.1.4 required **Vector3d** **linear\_acceleration** = 5

5.26.1.5 package gazebo **msgs**

5.26.1.6 required **Quaternion** **orientation** = 3

5.26.1.7 import **quaternion** **proto**

## 5.27 inertial.proto File Reference

### Variables

- message **Inertial**
- optional double **ixx** = 3
- optional double **ixy** = 4
- optional double **ixz** = 5
- optional double **iyx** = 6
- optional double **iyz** = 7
- optional double **izz** = 8
- package gazebo **msgs**

- optional **Pose pose = 2**
- import **pose proto**

### 5.27.1 Variable Documentation

#### 5.27.1.1 message Inertial

##### Initial value:

```
{  
  optional double mass = 1
```

#### 5.27.1.2 optional double ixx = 3

#### 5.27.1.3 optional double ixy = 4

#### 5.27.1.4 optional double ixz = 5

#### 5.27.1.5 optional double iyy = 6

#### 5.27.1.6 optional double iyz = 7

#### 5.27.1.7 optional double izz = 8

#### 5.27.1.8 package gazebo msgs

#### 5.27.1.9 optional Pose pose = 2

#### 5.27.1.10 import pose proto

## 5.28 int.proto File Reference

### Variables

- message **Int**
- package gazebo **msgs**

### 5.28.1 Variable Documentation

#### 5.28.1.1 message Int

##### Initial value:

```
{  
  required int32 data = 1
```

## 5.28.1.2 package gazebo msgs

## 5.29 joint.proto File Reference

## Variables

- repeated double **angle** = 2
- optional **Axis axis1** = 7
- optional **Axis axis2** = 8
- optional double **bounce** = 10
- optional double **cfm** = 9
- optional string **child** = 5
- optional double **fudge\_factor** = 12
- message **Joint**
- optional double **limit\_cfm** = 13
- optional double **limit\_erp** = 14
- package gazebo **msgs**
- optional string **parent** = 4
- optional **Pose pose** = 6
- import vector3d **proto**
- optional double **suspension\_cfm** = 15
- optional double **suspension\_erp** = 16
- optional Type **type** = 3
- optional double **velocity** = 11

## 5.29.1 Variable Documentation

5.29.1.1 repeated double angle = 2

5.29.1.2 optional **Axis axis1** = 75.29.1.3 optional **Axis axis2** = 8

5.29.1.4 optional double bounce = 10

5.29.1.5 optional double cfm = 9

5.29.1.6 optional string child = 5

5.29.1.7 optional double fudge\_factor = 12

5.29.1.8 message **Joint**

## Initial value:

```

{
  enum Type
  {
    REVOLUTE = 1;
    REVOLUTE2 = 2;
    PRISMATIC = 3;
    UNIVERSAL = 4;
    BALL = 5;
  }
}

```

```

    SCREW      = 6;
}
required string name      = 1

```

5.29.1.9 optional double limit\_cfm = 13

5.29.1.10 optional double limit\_erp = 14

5.29.1.11 package gazebo msgs

5.29.1.12 optional string parent = 4

5.29.1.13 optional Pose pose = 6

5.29.1.14 import pose proto

5.29.1.15 optional double suspension\_cfm = 15

5.29.1.16 optional double suspension\_erp = 16

5.29.1.17 optional Type type = 3

5.29.1.18 optional double velocity = 11

## 5.30 joint\_animation.proto File Reference

### Variables

- repeated **Joint joint** = 2
- message **JointAnimation**
- package gazebo **msgs**
- import **pose proto**
- repeated **Time time** = 3

### 5.30.1 Variable Documentation

5.30.1.1 repeated **Joint joint** = 2

5.30.1.2 message **JointAnimation**

#### Initial value:

```

{
  message Joint
  {
    repeated string name = 1;
    repeated double angle = 2;
  }

  required string model_name = 1

```

5.30.1.3 package gazebo msgs

5.30.1.4 import time proto

5.30.1.5 repeated Time time = 3

## 5.31 joint\_cmd.proto File Reference

### Variables

- optional int32 **axis** = 2 [default=0]
- optional double **force** = 3
- message **JointCmd**
- package gazebo **msgs**
- optional **PID position** = 4
- import vector3d **proto**
- optional bool **reset** = 6
- optional **PID velocity** = 5

### 5.31.1 Variable Documentation

5.31.1.1 optional int32 axis = 2 [default=0]

5.31.1.2 optional double force = 3

5.31.1.3 message JointCmd

#### Initial value:

```
{
  required string name      = 1
```

5.31.1.4 package gazebo msgs

5.31.1.5 optional PID position = 4

5.31.1.6 import pid proto

5.31.1.7 optional bool reset = 6

5.31.1.8 optional PID velocity = 5

## 5.32 joint\_wrench.proto File Reference

### Variables

- required **Vector3d body\_1\_force** = 3
- required **Vector3d body\_1\_torque** = 5
- required **Vector3d body\_2\_force** = 4

- required string **body\_2\_name** = 2
- required **Vector3d** **body\_2\_torque** = 6
- message **JointWrench**
- package gazebo **msgs**
- import vector3d **proto**

### 5.32.1 Variable Documentation

5.32.1.1 required **Vector3d** **body\_1\_force** = 3

5.32.1.2 required **Vector3d** **body\_1\_torque** = 5

5.32.1.3 required **Vector3d** **body\_2\_force** = 4

5.32.1.4 required string **body\_2\_name** = 2

5.32.1.5 required **Vector3d** **body\_2\_torque** = 6

5.32.1.6 message **JointWrench**

#### Initial value:

```
{
  required string body_1_name = 1
```

5.32.1.7 package gazebo **msgs**

5.32.1.8 import vector3d **proto**

## 5.33 joint\_wrench\_stamped.proto File Reference

### Variables

- message **ForceTorque**
- package gazebo **msgs**
- import joint\_wrench **proto**
- required **Time** **time** = 2

### 5.33.1 Variable Documentation

5.33.1.1 message **ForceTorque**

#### Initial value:

```
{
  repeated JointWrench wrench = 1
```

5.33.1.2 package gazebo msgs

5.33.1.3 import time proto

5.33.1.4 required Time time = 2

## 5.34 laserscan.proto File Reference

### Variables

- required double **angle\_max** = 4
- required double **angle\_min** = 3
- required double **angle\_step** = 5
- repeated double **intensities** = 9
- message **LaserScan**
- package gazebo **msgs**
- import **pose proto**
- required double **range\_max** = 7
- required double **range\_min** = 6
- repeated double **ranges** = 8
- required **Pose world\_pose** = 2

### 5.34.1 Variable Documentation

5.34.1.1 required double angle\_max = 4

5.34.1.2 required double angle\_min = 3

5.34.1.3 required double angle\_step = 5

5.34.1.4 repeated double intensities = 9

5.34.1.5 message LaserScan

#### Initial value:

```
{
  required string frame      = 1
```

5.34.1.6 package gazebo msgs

5.34.1.7 import pose proto

5.34.1.8 required double range\_max = 7

5.34.1.9 required double range\_min = 6

5.34.1.10 repeated double ranges = 8

5.34.1.11 required Pose world\_pose = 2

## 5.35 laserscan\_stamped.proto File Reference

### Variables

- message **LaserScanStamped**
- package gazebo **msgs**
- import **time proto**
- required **LaserScan scan = 2**

### 5.35.1 Variable Documentation

5.35.1.1 message LaserScanStamped

#### Initial value:

```
{
  required Time time          = 1
```

5.35.1.2 package gazebo msgs

5.35.1.3 import laserscan proto

5.35.1.4 required LaserScan scan = 2

## 5.36 light.proto File Reference

### Enumerations

- enum **LightType** { **DIRECTIONAL = 3** }

### Variables

- optional float **attenuation\_constant = 6**
- optional float **attenuation\_linear = 7**
- optional float **attenuation\_quadratic = 8**
- optional bool **cast\_shadows = 11**
- optional **Color diffuse = 4**
- optional **Vector3d direction = 9**
- message **Light**
- package gazebo **msgs**
- optional **Pose pose = 3**
- import header **proto**
- optional float **range = 10**
- optional **Color specular = 5**
- optional float **spot\_falloff = 14**



- optional float **spot\_inner\_angle** = 12
- optional float **spot\_outer\_angle** = 13
- enum **LightType** type = 2

### 5.36.1 Enumeration Type Documentation

#### 5.36.1.1 enum LightType

Enumerator:

***DIRECTIONAL***

### 5.36.2 Variable Documentation

5.36.2.1 optional float attenuation\_constant = 6

5.36.2.2 optional float attenuation\_linear = 7

5.36.2.3 optional float attenuation\_quadratic = 8

5.36.2.4 optional bool cast\_shadows = 11

5.36.2.5 optional Color diffuse = 4

5.36.2.6 optional Vector3d direction = 9

5.36.2.7 message Light

**Initial value:**

```
{
  required string name = 1
```

5.36.2.8 package gazebo msgs

5.36.2.9 optional Pose pose = 3

5.36.2.10 import color proto

5.36.2.11 optional float range = 10

5.36.2.12 optional Color specular = 5

5.36.2.13 optional float spot\_falloff = 14

5.36.2.14 optional float spot\_inner\_angle = 12

5.36.2.15 optional float spot\_outer\_angle = 13

5.36.2.16 enum LightType type = 2

## 5.37 link.proto File Reference

### Variables

- repeated **Collision** **collision** = 10
- optional bool **enabled** = 6
- optional bool **gravity** = 4
- optional **Inertial** **inertial** = 7
- optional bool **kinematic** = 5
- message **Link**
- package gazebo **msgs**
- required string **name** = 2
- optional **Pose** **pose** = 8
- repeated **Projector** **projector** = 12
- import header **proto**
- optional bool **self\_collide** = 3
- repeated **Sensor** **sensor** = 11
- repeated **Visual** **visual** = 9

### 5.37.1 Variable Documentation

5.37.1.1 repeated **Collision** **collision** = 10

5.37.1.2 optional bool **enabled** = 6

5.37.1.3 optional bool **gravity** = 4

5.37.1.4 optional **Inertial** **inertial** = 7

5.37.1.5 optional bool **kinematic** = 5

5.37.1.6 message **Link**

#### Initial value:

```
{
  required uint32 id           = 1
```

5.37.1.7 package gazebo **msgs**

5.37.1.8 required string **name** = 2

5.37.1.9 optional **Pose** **pose** = 8

5.37.1.10 repeated **Projector** **projector** = 12

5.37.1.11 import **pose** **proto**

5.37.1.12 optional bool **self\_collide** = 3

5.37.1.13 repeated Sensor sensor = 11

5.37.1.14 repeated Visual visual = 9

## 5.38 log\_control.proto File Reference

### Variables

- optional string **base\_path** = 4
- message **LogControl**
- package gazebo **msgs**
- optional bool **paused** = 3
- optional bool **stop** = 2

### 5.38.1 Variable Documentation

5.38.1.1 optional string base\_path = 4

5.38.1.2 message LogControl

#### Initial value:

```
{  
  optional bool start = 1
```

5.38.1.3 package gazebo msgs

5.38.1.4 optional bool paused = 3

5.38.1.5 optional bool stop = 2

## 5.39 log\_status.proto File Reference

### Variables

- optional LogFile **log\_file** = 2
- message **LogStatus**
- package gazebo **msgs**
- import **time proto**

### 5.39.1 Variable Documentation

5.39.1.1 optional LogFile log\_file = 2

5.39.1.2 message LogStatus

#### Initial value:

```

{
  message LogFile
  {
    enum Units
    {
      BYTES = 1;
      K_BYTES = 2;
      M_BYTES = 3;
      G_BYTES = 4;
    }

    optional string uri          = 1;
    optional string base_path   = 2;
    optional string full_path   = 3;
    optional float size         = 4;
    optional Units size_units   = 5;
  }

  optional Time sim_time      = 1

```

### 5.39.1.3 package gazebo msgs

### 5.39.1.4 import time proto

## 5.40 mainpage\_msgs.html File Reference

## 5.41 material.proto File Reference

### Variables

- optional **Color ambient** = 4
- optional **Color diffuse** = 5
- optional **Color emissive** = 7
- message **Material**
- package gazebo **msgs**
- optional string **normal\_map** = 3
- import **color proto**
- optional ShaderType **shader\_type** = 2
- optional **Color specular** = 6

### 5.41.1 Variable Documentation

#### 5.41.1.1 optional Color ambient = 4

#### 5.41.1.2 optional Color diffuse = 5

#### 5.41.1.3 optional Color emissive = 7

#### 5.41.1.4 message Material

### Initial value:

```

{
  enum ShaderType
  {
    VERTEX          = 1;

```

```

    PIXEL = 2;
    NORMAL_MAP_OBJECT_SPACE = 3;
    NORMAL_MAP_TANGENT_SPACE = 4;
}

message Script
{
    repeated string uri = 1;
    required string name = 2;
}

optional Script script = 1

```

#### 5.41.1.5 package gazebo msgs

#### 5.41.1.6 optional string normal\_map = 3

#### 5.41.1.7 import color proto

#### 5.41.1.8 optional ShaderType shader\_type = 2

#### 5.41.1.9 optional Color specular = 6

## 5.42 meshgeom.proto File Reference

### Variables

- message **MeshGeom**
- package gazebo **msgs**
- import vector3d **proto**
- optional **Vector3d** scale = 2

### 5.42.1 Variable Documentation

#### 5.42.1.1 message MeshGeom

##### Initial value:

```

{
    required string filename = 1

```

#### 5.42.1.2 package gazebo msgs

#### 5.42.1.3 import vector3d proto

#### 5.42.1.4 optional Vector3d scale = 2

## 5.43 model.proto File Reference

### Variables

- optional bool **deleted** = 7

- optional uint32 **id** = 2
- optional bool **is\_static** = 3
- repeated **Joint joint** = 5
- repeated **Link link** = 6
- message **Model**
- package gazebo **msgs**
- optional **Pose pose** = 4
- import **joint proto**
- repeated **Visual visual** = 8

### 5.43.1 Variable Documentation

5.43.1.1 optional bool deleted = 7

5.43.1.2 optional uint32 id = 2

5.43.1.3 optional bool is\_static = 3

5.43.1.4 repeated **Joint joint** = 5

5.43.1.5 repeated **Link link** = 6

5.43.1.6 message **Model**

#### Initial value:

```
{
  required string name          = 1
```

5.43.1.7 package gazebo **msgs**

5.43.1.8 optional **Pose pose** = 4

5.43.1.9 import **visual proto**

5.43.1.10 repeated **Visual visual** = 8

## 5.44 model\_configuration.proto File Reference

### Variables

- repeated string **joint\_names** = 2
- repeated double **joint\_positions** = 3
- optional string **link\_name** = 5
- message **ModelConfiguration**
- package gazebo **msgs**
- optional **Pose pose** = 4
- import **time proto**

### 5.44.1 Variable Documentation

5.44.1.1 repeated string joint\_names = 2

5.44.1.2 repeated double joint\_positions = 3

5.44.1.3 optional string link\_name = 5

5.44.1.4 message ModelConfiguration

#### Initial value:

```
{  
  required Time time = 1
```

5.44.1.5 package gazebo msgs

5.44.1.6 optional Pose pose = 4

5.44.1.7 import pose proto

## 5.45 model\_v.proto File Reference

### Variables

- message **Model\_V**
- package gazebo **msgs**
- import **model proto**

### 5.45.1 Variable Documentation

5.45.1.1 message Model\_V

#### Initial value:

```
{  
  repeated Model models = 2
```

5.45.1.2 package gazebo msgs

5.45.1.3 import model proto

## 5.46 packet.proto File Reference

### Variables

- package gazebo **msgs**
- message **Packet**

- import **time proto**
- required bytes **serialized\_data** = 3
- required string **type** = 2

### 5.46.1 Variable Documentation

5.46.1.1 package gazebo msgs

5.46.1.2 message Packet

**Initial value:**

```
{
  required Time stamp          = 1
```

5.46.1.3 import time proto

5.46.1.4 required bytes serialized\_data = 3

5.46.1.5 required string type = 2

## 5.47 physics.proto File Reference

### Variables

- optional double **cfm** = 7
- optional double **contact\_max\_correcting\_vel** = 9
- optional double **contact\_surface\_layer** = 10
- optional double **dt** = 4
- optional bool **enable\_physics** = 13
- optional double **erp** = 8
- optional **Vector3d** **gravity** = 11
- optional int32 **iters** = 5
- package gazebo **msgs**
- message **Physics**
- import vector3d **proto**
- optional string **solver\_type** = 3
- optional double **sor** = 6
- optional double **update\_rate** = 12

### 5.47.1 Variable Documentation

5.47.1.1 optional double cfm = 7

5.47.1.2 optional double contact\_max\_correcting\_vel = 9

5.47.1.3 optional double contact\_surface\_layer = 10



5.47.1.4 optional double `dt` = 4

5.47.1.5 optional bool `enable_physics` = 13

5.47.1.6 optional double `erp` = 8

5.47.1.7 optional `Vector3d` `gravity` = 11

5.47.1.8 optional int32 `iters` = 5

5.47.1.9 package gazebo `msgs`

5.47.1.10 message `Physics`

**Initial value:**

```
{
  enum Type
  {
    ODE = 1;
    BULLET = 2;
  }
  required Type type = 2[default=ODE]
```

5.47.1.11 import header `proto`

5.47.1.12 optional string `solver_type` = 3

5.47.1.13 optional double `sor` = 6

5.47.1.14 optional double `update_rate` = 12

## 5.48 pid.proto File Reference

### Variables

- optional double `d_gain` = 4[default=0.0]
- optional double `i_gain` = 3[default=0.0]
- optional double `i_max` = 5[default=0.0]
- optional double `i_min` = 6[default=0.0]
- optional double `limit` = 7[default=0.0]
- package gazebo `msgs`
- optional double `p_gain` = 2[default=0.0]
- message `PID`

### 5.48.1 Variable Documentation

5.48.1.1 optional double `d_gain` = 4[default=0.0]

5.48.1.2 optional double `i_gain` = 3[default=0.0]

5.48.1.3 optional double `i_max` = 5[default=0.0]

5.48.1.4 optional double `i_min` = 6[default=0.0]

5.48.1.5 optional double `limit` = 7[default=0.0]

5.48.1.6 package `gazebo_msgs`

5.48.1.7 optional double `p_gain` = 2[default=0.0]

5.48.1.8 message `PID`

**Initial value:**

```
{
  optional double target = 1[default=0.0]
```

## 5.49 planegeom.proto File Reference

### Variables

- optional double `d` = 3 [default = 0]
- package `gazebo_msgs`
- message `PlaneGeom`
- import vector3d `proto`
- required `Vector2d` `size` = 2

### 5.49.1 Variable Documentation

5.49.1.1 optional double `d` = 3 [default = 0]

5.49.1.2 package `gazebo_msgs`

5.49.1.3 message `PlaneGeom`

**Initial value:**

```
{
  required Vector3d normal = 1
```

5.49.1.4 import vector2d `proto`

5.49.1.5 required `Vector2d` `size` = 2

## 5.50 plugin.proto File Reference

### Variables

- required string `filename` = 2

- package gazebo **msgs**
- message **Plugin**

### 5.50.1 Variable Documentation

5.50.1.1 required string filename = 2

5.50.1.2 package gazebo msgs

5.50.1.3 message **Plugin**

**Initial value:**

```
{
  required string name          = 1
```

## 5.51 pose.proto File Reference

### Variables

- package gazebo **msgs**
- required **Quaternion orientation** = 3
- message **Pose**
- required **Vector3d position** = 2
- import vector3d **proto**

### 5.51.1 Variable Documentation

5.51.1.1 package gazebo msgs

5.51.1.2 required **Quaternion orientation** = 3

5.51.1.3 message **Pose**

**Initial value:**

```
{
  optional string name          = 1
```

5.51.1.4 required **Vector3d position** = 2

5.51.1.5 import quaternion proto

## 5.52 pose\_animation.proto File Reference

### Variables

- package gazebo **msgs**

- repeated **Pose pose** = 2
- message **PoseAnimation**
- import **pose proto**
- repeated **Time time** = 3

### 5.52.1 Variable Documentation

5.52.1.1 package gazebo msgs

5.52.1.2 repeated **Pose pose** = 2

5.52.1.3 message **PoseAnimation**

**Initial value:**

```
{
  required string model_name      = 1
```

5.52.1.4 import time proto

5.52.1.5 repeated **Time time** = 3

## 5.53 pose\_stamped.proto File Reference

### Variables

- package gazebo **msgs**
- required **Pose pose** = 2
- message **PoseStamped**
- import **time proto**

### 5.53.1 Variable Documentation

5.53.1.1 package gazebo msgs

5.53.1.2 required **Pose pose** = 2

5.53.1.3 message **PoseStamped**

**Initial value:**

```
{
  required Time time      = 1
```

5.53.1.4 import pose proto

## 5.54 pose\_trajectory.proto File Reference

### Variables

- optional uint32 **id** = 2
- package gazebo **msgs**
- repeated **PoseStamped** pose\_stamped = 3
- message **PoseTrajectory**
- import **pose\_stamped** proto

### 5.54.1 Variable Documentation

5.54.1.1 optional uint32 id = 2

5.54.1.2 package gazebo msgs

5.54.1.3 repeated PoseStamped pose\_stamped = 3

5.54.1.4 message PoseTrajectory

#### Initial value:

```
{  
  optional string name = 1
```

5.54.1.5 import pose\_stamped proto

## 5.55 pose\_v.proto File Reference

### Variables

- package gazebo **msgs**
- message **Pose\_V**
- import **pose** proto

### 5.55.1 Variable Documentation

5.55.1.1 package gazebo msgs

5.55.1.2 message Pose\_V

#### Initial value:

```
{  
  repeated Pose pose = 1
```

5.55.1.3 `import pose proto`

## 5.56 projector.proto File Reference

### Variables

- optional bool **enabled** = 7[default=true]
- optional double **far\_clip** = 6[default=10.0]
- optional double **fov** = 4[default=0.785]
- package gazebo **msgs**
- optional double **near\_clip** = 5[default=0.1]
- optional **Pose pose** = 3
- message **Projector**
- `import pose proto`
- optional string **texture** = 2

### 5.56.1 Variable Documentation

5.56.1.1 optional bool `enabled` = 7[default=true]

5.56.1.2 optional double `far_clip` = 6[default=10.0]

5.56.1.3 optional double `fov` = 4[default=0.785]

5.56.1.4 package gazebo `msgs`

5.56.1.5 optional double `near_clip` = 5[default=0.1]

5.56.1.6 optional `Pose pose` = 3

5.56.1.7 message `Projector`

#### Initial value:

```
{
  required string name          = 1
```

5.56.1.8 `import pose proto`

5.56.1.9 optional string `texture` = 2

## 5.57 publish.proto File Reference

### Variables

- required string **host** = 3
- required string **msg\_type** = 2
- package gazebo **msgs**
- required uint32 **port** = 4
- message **Publish**

### 5.57.1 Variable Documentation

5.57.1.1 required string host = 3

5.57.1.2 required string msg\_type = 2

5.57.1.3 package gazebo msgs

5.57.1.4 required uint32 port = 4

5.57.1.5 message Publish

#### Initial value:

```
{  
  required string topic = 1
```

## 5.58 publishers.proto File Reference

### Variables

- package gazebo **msgs**
- import publish **proto**
- message **Publishers**

### 5.58.1 Variable Documentation

5.58.1.1 package gazebo msgs

5.58.1.2 import publish proto

5.58.1.3 message Publishers

#### Initial value:

```
{  
  repeated Publish publisher = 1
```

## 5.59 quaternion.proto File Reference

### Variables

- package gazebo **msgs**
- message **Quaternion**
- required double **w** = 5
- required double **y** = 3
- required double **z** = 4

## 5.59.1 Variable Documentation

5.59.1.1 package gazebo msgs

5.59.1.2 message Quaternion

**Initial value:**

```
{  
  required double x = 2
```

5.59.1.3 required double w = 5

5.59.1.4 required double y = 3

5.59.1.5 required double z = 4

## 5.60 raysensor.proto File Reference

### Variables

- optional double **horizontal\_max\_angle** = 5
- optional double **horizontal\_min\_angle** = 4
- optional double **horizontal\_resolution** = 3
- optional int32 **horizontal\_samples** = 2
- package gazebo **msgs**
- optional double **range\_max** = 11
- optional double **range\_min** = 10
- optional double **range\_resolution** = 12
- message **RaySensor**
- optional double **vertical\_max\_angle** = 9
- optional double **vertical\_min\_angle** = 8
- optional double **vertical\_resolution** = 7
- optional int32 **vertical\_samples** = 6

## 5.60.1 Variable Documentation

5.60.1.1 optional double horizontal\_max\_angle = 5

5.60.1.2 optional double horizontal\_min\_angle = 4

5.60.1.3 optional double horizontal\_resolution = 3

5.60.1.4 optional int32 horizontal\_samples = 2

5.60.1.5 package gazebo msgs

5.60.1.6 optional double range\_max = 11



5.60.1.7 optional double range\_min = 10

5.60.1.8 optional double range\_resolution = 12

5.60.1.9 message RaySensor

**Initial value:**

```
{
  optional bool display_scan          = 1
```

5.60.1.10 optional double vertical\_max\_angle = 9

5.60.1.11 optional double vertical\_min\_angle = 8

5.60.1.12 optional double vertical\_resolution = 7

5.60.1.13 optional int32 vertical\_samples = 6

## 5.61 request.proto File Reference

### Variables

- optional string **data** = 3
- optional double **dbl\_data** = 4
- package gazebo **msgs**
- message **Request**
- required string **request** = 2

### 5.61.1 Variable Documentation

5.61.1.1 optional string data = 3

5.61.1.2 optional double dbl\_data = 4

5.61.1.3 package gazebo msgs

5.61.1.4 message Request

**Initial value:**

```
{
  required int32 id          = 1
```

5.61.1.5 required string request = 2

## 5.62 response.proto File Reference

## Variables

- package gazebo **msgs**
- required string **request** = 2
- message **Response**
- required string **response** = 3
- optional bytes **serialized\_data** = 5
- optional string **type** = 4

### 5.62.1 Variable Documentation

5.62.1.1 package gazebo msgs

5.62.1.2 required string request = 2

5.62.1.3 message Response

#### Initial value:

```
{
  required int32 id           = 1
```

5.62.1.4 required string response = 3

5.62.1.5 optional bytes serialized\_data = 5

5.62.1.6 optional string type = 4

## 5.63 road.proto File Reference

### Variables

- package gazebo **msgs**
- repeated **Vector3d point** = 3
- import vector3d **proto**
- message **Road**
- required double **width** = 2

### 5.63.1 Variable Documentation

5.63.1.1 package gazebo msgs

5.63.1.2 repeated Vector3d point = 3

5.63.1.3 import vector3d proto

5.63.1.4 message Road

#### Initial value:

```
{
  required string name      = 1
```

5.63.1.5 required double width = 2

## 5.64 scene.proto File Reference

### Variables

- optional **Color ambient** = 2
- optional **Color background** = 3
- optional **Fog fog** = 6
- optional bool **grid** = 7
- repeated **Joint joint** = 10
- repeated **Light light** = 9
- repeated **Model model** = 8
- package gazebo **msgs**
- import header **proto**
- message **Scene**
- optional bool **shadows** = 5 [default = true]
- optional **Sky sky** = 4

### 5.64.1 Variable Documentation

5.64.1.1 optional **Color ambient** = 2

5.64.1.2 optional **Color background** = 3

5.64.1.3 optional **Fog fog** = 6

5.64.1.4 optional bool **grid** = 7

5.64.1.5 repeated **Joint joint** = 10

5.64.1.6 repeated **Light light** = 9

5.64.1.7 repeated **Model model** = 8

5.64.1.8 package gazebo **msgs**

5.64.1.9 import model **proto**

5.64.1.10 message **Scene**

#### Initial value:

```
{
  required string name      = 1
```

5.64.1.11 optional bool shadows = 5 [default = true]

5.64.1.12 optional Sky sky = 4

## 5.65 selection.proto File Reference

### Variables

- package gazebo **msgs**
- required string **name** = 2
- import header **proto**
- optional bool **selected** = 3 [default = false]
- message **Selection**

### 5.65.1 Variable Documentation

5.65.1.1 package gazebo msgs

5.65.1.2 required string name = 2

5.65.1.3 import header proto

5.65.1.4 optional bool selected = 3 [default = false]

5.65.1.5 message Selection

#### Initial value:

```
{
  required uint32 id      = 1
```

## 5.66 sensor.proto File Reference

### Variables

- optional bool **always\_on** = 4
- optional **CameraSensor** camera = 7
- optional **ContactSensor** contact = 9
- package gazebo **msgs**
- required string **parent** = 2
- optional **Pose** pose = 6
- import **pose** proto
- optional **RaySensor** ray = 8
- message **Sensor**
- optional string **topic** = 11
- required string **type** = 3
- optional double **update\_rate** = 5
- optional bool **visualize** = 10

### 5.66.1 Variable Documentation

5.66.1.1 optional bool `always_on` = 4

5.66.1.2 optional `CameraSensor` `camera` = 7

5.66.1.3 optional `ContactSensor` `contact` = 9

5.66.1.4 package `gazebo_msgs`

5.66.1.5 required string `parent` = 2

5.66.1.6 optional `Pose` `pose` = 6

5.66.1.7 import `contactsensor.proto`

5.66.1.8 optional `RaySensor` `ray` = 8

5.66.1.9 message `Sensor`

#### Initial value:

```
{
  required string name           = 1
```

5.66.1.10 optional string `topic` = 11

5.66.1.11 required string `type` = 3

5.66.1.12 optional double `update_rate` = 5

5.66.1.13 optional bool `visualize` = 10

## 5.67 server\_control.proto File Reference

### Variables

- package `gazebo_msgs`
- optional bool `new_world` = 4
- optional string `open_filename` = 3
- import header `proto`
- optional string `save_filename` = 2
- message `ServerControl`

### 5.67.1 Variable Documentation

5.67.1.1 package `gazebo_msgs`

5.67.1.2 optional bool `new_world` = 4

5.67.1.3 optional string open\_filename = 3

5.67.1.4 import header proto

5.67.1.5 optional string save\_filename = 2

5.67.1.6 message ServerControl

**Initial value:**

```
{
  optional string save_world_name = 1
```

## 5.68 shadows.proto File Reference

### Variables

- optional **Color** color = 6
- package gazebo **msgs**
- import **color proto**
- message **Shadows**

### 5.68.1 Variable Documentation

5.68.1.1 optional **Color** color = 6

5.68.1.2 package gazebo msgs

5.68.1.3 import color proto

5.68.1.4 message Shadows

**Initial value:**

```
{
  enum ShadowType
  {
    STENCIL_ADDITIVE = 1;
    STENCIL_MODULATIVE = 2;
    TEXTURE_ADDITIVE = 3;
    TEXTURE_MODULATIVE = 4;
  }
  optional ShadowType type = 5
```

## 5.69 sky.proto File Reference

### Variables

- optional **Color** cloud\_ambient = 6
- optional double **humidity** = 7
- optional double **mean\_cloud\_size** = 8
- package gazebo **msgs**

- import **color proto**
- message **Sky**
- optional double **sunrise** = 2
- optional double **sunset** = 3
- optional double **wind\_direction** = 5
- optional double **wind\_speed** = 4

### 5.69.1 Variable Documentation

5.69.1.1 optional **Color** cloud\_ambient = 6

5.69.1.2 optional double humidity = 7

5.69.1.3 optional double mean\_cloud\_size = 8

5.69.1.4 package gazebo msgs

5.69.1.5 import color proto

5.69.1.6 message **Sky**

#### Initial value:

```
{
  optional double time          = 1
```

5.69.1.7 optional double sunrise = 2

5.69.1.8 optional double sunset = 3

5.69.1.9 optional double wind\_direction = 5

5.69.1.10 optional double wind\_speed = 4

## 5.70 spheregeom.proto File Reference

### Variables

- package gazebo **msgs**
- message **SphereGeom**

### 5.70.1 Variable Documentation

5.70.1.1 package gazebo msgs

5.70.1.2 message **SphereGeom**

#### Initial value:

```
{
  required double radius = 1
```

## 5.71 subscribe.proto File Reference

### Variables

- required string **host** = 2
- optional bool **latching** = 5 [default=false]
- required string **msg\_type** = 4
- package gazebo **msgs**
- required uint32 **port** = 3
- message **Subscribe**

### 5.71.1 Variable Documentation

5.71.1.1 required string host = 2

5.71.1.2 optional bool latching = 5 [default=false]

5.71.1.3 required string msg\_type = 4

5.71.1.4 package gazebo msgs

5.71.1.5 required uint32 port = 3

5.71.1.6 message **Subscribe**

#### Initial value:

```
{
  required string topic    = 1
```

## 5.72 surface.proto File Reference

### Variables

- optional double **bounce\_threshold** = 3
- optional double **kd** = 7
- optional double **kp** = 6
- optional double **max\_vel** = 8
- optional double **min\_depth** = 9
- package gazebo **msgs**
- import **friction proto**
- optional double **restitution\_coefficient** = 2
- optional double **soft\_cfm** = 4
- optional double **soft\_erp** = 5
- message **Surface**



### 5.72.1 Variable Documentation

5.72.1.1 optional double bounce\_threshold = 3

5.72.1.2 optional double kd = 7

5.72.1.3 optional double kp = 6

5.72.1.4 optional double max\_vel = 8

5.72.1.5 optional double min\_depth = 9

5.72.1.6 package gazebo msgs

5.72.1.7 import friction proto

5.72.1.8 optional double restitution\_coefficient = 2

5.72.1.9 optional double soft\_cfm = 4

5.72.1.10 optional double soft\_erp = 5

5.72.1.11 message Surface

#### Initial value:

```
{  
  optional Friction friction = 1
```

## 5.73 test.proto File Reference

### Variables

- package gazebo **msgs**
- import header **proto**
- message **Test**

### 5.73.1 Variable Documentation

5.73.1.1 package gazebo msgs

5.73.1.2 import header proto

5.73.1.3 message Test

#### Initial value:

```
{  
  required Header header = 1
```

## 5.74 time.proto File Reference

### Variables

- package gazebo **msgs**
- required int32 **nsec** = 2
- message **Time**

### 5.74.1 Variable Documentation

5.74.1.1 package gazebo msgs

5.74.1.2 required int32 nsec = 2

5.74.1.3 message Time

#### Initial value:

```
{  
  required int32 sec = 1
```

## 5.75 topic\_info.proto File Reference

### Variables

- package gazebo **msgs**
- import publish **proto**
- repeated **Publish publisher** = 2
- repeated **Subscribe subscriber** = 3
- message **TopicInfo**

### 5.75.1 Variable Documentation

5.75.1.1 package gazebo msgs

5.75.1.2 import subscribe proto

5.75.1.3 repeated Publish publisher = 2

5.75.1.4 repeated Subscribe subscriber = 3

5.75.1.5 message TopicInfo

#### Initial value:

```
{  
  required string msg_type = 1
```

## 5.76 track\_visual.proto File Reference

### Variables

- optional bool **inherit\_orientation** = 2
- optional double **max\_dist** = 4
- optional double **min\_dist** = 3
- package gazebo **msgs**
- message **TrackVisual**

### 5.76.1 Variable Documentation

5.76.1.1 optional bool inherit\_orientation = 2

5.76.1.2 optional double max\_dist = 4

5.76.1.3 optional double min\_dist = 3

5.76.1.4 package gazebo msgs

5.76.1.5 message TrackVisual

#### Initial value:

```
{  
  required string name          = 1
```

## 5.77 vector2d.proto File Reference

### Variables

- package gazebo **msgs**
- import header **proto**
- message **Vector2d**
- required double **x** = 1
- required double **y** = 2

### 5.77.1 Variable Documentation

5.77.1.1 package gazebo msgs

5.77.1.2 import header proto

5.77.1.3 message Vector2d

#### Initial value:

```
{  
  required double x = 1
```

5.77.1.4 required double **y** = 2

## 5.78 vector3d.proto File Reference

### Variables

- package gazebo **msgs**
- import header **proto**
- message **Vector3d**
- required double **y** = 3
- required double **z** = 4

### 5.78.1 Variable Documentation

5.78.1.1 package gazebo msgs

5.78.1.2 import header proto

5.78.1.3 message Vector3d

#### Initial value:

```
{
  required double x = 2
```

5.78.1.4 required double **y** = 3

5.78.1.5 required double **z** = 4

## 5.79 visual.proto File Reference

### Variables

- optional bool **cast\_shadows** = 3
- optional bool **delete\_me** = 11
- optional **Geometry geometry** = 7
- optional bool **is\_static** = 12
- optional double **laser\_retro** = 5
- optional **Material material** = 8
- package gazebo **msgs**
- optional string **parent\_name** = 2
- optional **Plugin plugin** = 13
- optional **Pose pose** = 6
- import **pose proto**
- optional double **transparency** = 4
- optional bool **visible** = 9
- message **Visual**

### 5.79.1 Variable Documentation

5.79.1.1 optional bool cast\_shadows = 3

5.79.1.2 optional bool delete\_me = 11

5.79.1.3 optional **Geometry** geometry = 7

5.79.1.4 optional bool is\_static = 12

5.79.1.5 optional double laser\_retro = 5

5.79.1.6 optional **Material** material = 8

5.79.1.7 package gazebo msgs

5.79.1.8 optional string parent\_name = 2

5.79.1.9 optional **Plugin** plugin = 13

5.79.1.10 optional **Pose** pose = 6

5.79.1.11 import plugin proto

5.79.1.12 optional double transparency = 4

5.79.1.13 optional bool visible = 9

5.79.1.14 message **Visual**

#### Initial value:

```
{
  required string name          = 1
```

## 5.80 world\_control.proto File Reference

### Variables

- package gazebo **msgs**
- import world\_reset **proto**
- optional **WorldReset** reset = 3
- optional uint32 **seed** = 4
- optional bool **step** = 2
- message **WorldControl**

### 5.80.1 Variable Documentation

5.80.1.1 package gazebo msgs

5.80.1.2 `import world_reset proto`

5.80.1.3 optional `WorldReset` `reset = 3`

5.80.1.4 optional `uint32` `seed = 4`

5.80.1.5 optional `bool` `step = 2`

5.80.1.6 message `WorldControl`

**Initial value:**

```
{
  optional bool pause          = 1
```

## 5.81 world\_modify.proto File Reference

### Variables

- optional `bool` **create** = 3
- package gazebo **msgs**
- optional `bool` **remove** = 2
- message **WorldModify**

### 5.81.1 Variable Documentation

5.81.1.1 optional `bool` `create = 3`

5.81.1.2 package gazebo `msgs`

5.81.1.3 optional `bool` `remove = 2`

5.81.1.4 message `WorldModify`

**Initial value:**

```
{
  required string world_name = 1
```

## 5.82 world\_reset.proto File Reference

### Variables

- optional `bool` **model\_only** = 3[default = false]
- package gazebo **msgs**
- import header **proto**
- optional `bool` **time\_only** = 2[default = false]
- message **WorldReset**

### 5.82.1 Variable Documentation

5.82.1.1 optional bool `model_only` = 3[default = false]

5.82.1.2 package gazebo msgs

5.82.1.3 import header proto

5.82.1.4 optional bool `time_only` = 2[default = false]

5.82.1.5 message `WorldReset`

#### Initial value:

```
{
  optional bool all           = 1[default = true]
```

## 5.83 world\_stats.proto File Reference

### Variables

- required uint64 `iterations` = 6
- optional int32 `model_count` = 7
- package gazebo `msgs`
- required `Time` `pause_time` = 3
- required bool `paused` = 5
- import header `proto`
- required `Time` `real_time` = 4
- message `WorldStatistics`

### 5.83.1 Variable Documentation

5.83.1.1 required uint64 `iterations` = 6

5.83.1.2 optional int32 `model_count` = 7

5.83.1.3 package gazebo msgs

5.83.1.4 required `Time` `pause_time` = 3

5.83.1.5 required bool `paused` = 5

5.83.1.6 import time proto

5.83.1.7 required `Time` `real_time` = 4

5.83.1.8 message `WorldStatistics`

#### Initial value:

```
{
  required Time  sim_time      = 2
```

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