raytracer

0.1.0

Generated by Doxygen 1.9.1

Chapter 1

Hierarchical Index

1.1 Class Hierarchy

This inheritance list is sorted roughly, but not completely, alphabetically:

Chapter 2

Class Index

2.1 Class List

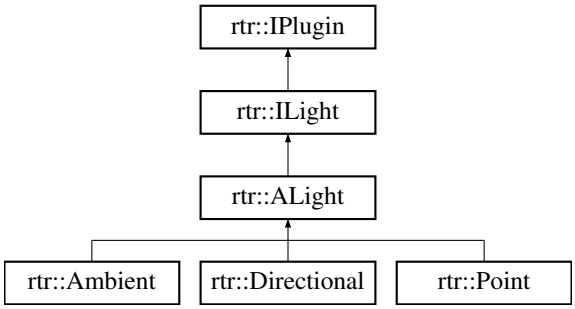
Here are the classes, structs, unions and interfaces with brief descriptions:

Chapter 3

Class Documentation

3.1 rtr::ALight Class Reference

Inheritance diagram for rtr::ALight:



Public Member Functions

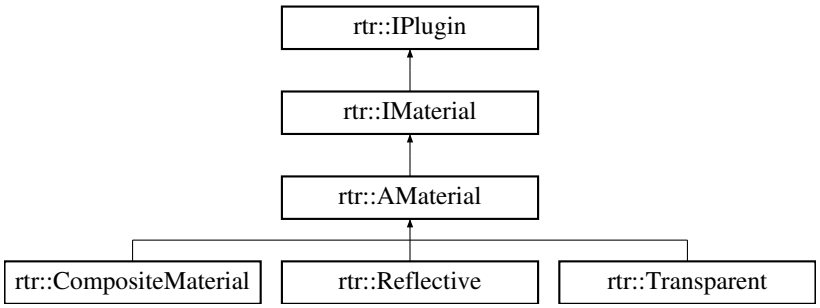
- void **setType** (const LightType &type) override
- void **setIntensity** (const float &intensity) override
- const LightType & **getType** () const override
- Vector & **getPosition** () override
- Vector & **getDirection** () override
- Color & **getColor** () override
- float & **getIntensity** () override

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

- App/include/RayTracer/Abstraction/ALight.hpp

3.2 rtr::AMaterial Class Reference

Inheritance diagram for rtr::AMaterial:



Public Member Functions

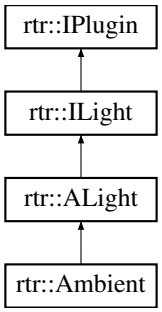
- void **setType** (const MaterialType &type) override
- void **setReflectivity** (const float &reflectivity) override
- void **setTransparency** (const float &transparency) override
- const MaterialType & **getType** () const override
- Color & **getColor** () override
- const float & **getReflectivity** () const override
- const float & **getTransparency** () const override

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

- App/include/RayTracer/Abstraction/AMaterial.hpp

3.3 rtr::Ambient Class Reference

Inheritance diagram for rtr::Ambient:



Public Member Functions

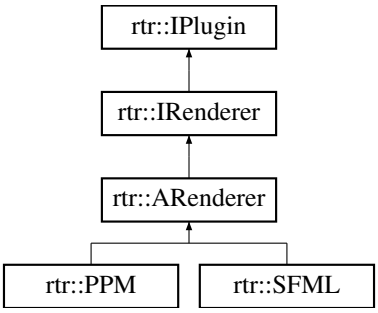
- Color **LightColor** (const Vector &normal, const Color &col) override
- std::string **getPluginName** () const override
- Vector & **getDirection** () override

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

- App/plugins/Light/Ambient/include/RayTracer/Ambient.hpp

3.4 rtr::ARenderer Class Reference

Inheritance diagram for rtr::ARenderer:



Public Member Functions

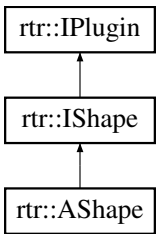
- void **setType** (const RendererType &rendererType) override
- void **setName** (const std::string &name) override
- const RendererType & **getType** () const override
- Resolution & **getResolution** () override
- Color & **getBackgroundColor** () override
- const std::string & **getName** () const override
- std::vector< std::vector< rtr::Color > > & **getPixels** () override
- void **setPixels** (const std::vector< std::vector< rtr::Color >> &pixels) override

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

- App/include/RayTracer/Abstraction/ARenderer.hpp

3.5 rtr::AShape Class Reference

Inheritance diagram for rtr::AShape:



Public Member Functions

- void **setType** (const ShapeType &type) override
- void **setRadius** (const double &radius) override
- void **setHeight** (const double &height) override
- void **setMaterial** (std::unique_ptr< AMaterial > material) override
- const ShapeType & **getType** () const override
- AMaterial & **getMaterial** () override
- Vector & **getPosition** () override
- Vector & **getNormal** () override
- Vector & **getRotation** () override
- const double & **getRadius** () const override
- const double & **getHeight** () const override
- Vector **getDistance** (const Vector &point) override

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

- App/include/RayTracer/Abstraction/AShape.hpp

3.6 rtr::Camera Class Reference

Public Member Functions

- **Camera** (uint16_t fov, const Vector &origin, const Vector &direction)
- void **setFov** (const uint16_t fov)
- uint16_t **getFov** () const
- const Vector & **getOrigin** () const
- const Vector & **getDirection** () const
- const Vector & **getUp** () const
- std::pair< Vector, Vector > **ray** (const double u, const double v) const

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

- App/include/RayTracer/Scene/Camera.hpp

3.7 rtr::Color Class Reference

Public Member Functions

- **Color** (const uint8_t &r, const uint8_t &g, const uint8_t &b)
- **Color** (const color_t &color)
- void **setColor** (const uint8_t &r, const uint8_t &g, const uint8_t &b)
- void **setColor** (const color_t &color)
- void **setR** (const uint8_t &r)
- void **setG** (const uint8_t &g)
- void **setB** (const uint8_t &b)
- color_t **getValue** () const
- uint8_t **getR** () const
- uint8_t **getG** () const
- uint8_t **getB** () const
- Color **operator+** (const Color &other) const
- Color **operator*** (const double &scalar) const
- Color **operator*** (const Color &other) const
- Color **operator+=** (const Color &other)
- Color **operator*=** (const double &scalar)

Static Public Member Functions

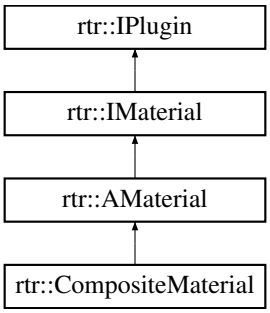
- static constexpr color_t **getRed** ()
- static constexpr color_t **getGreen** ()
- static constexpr color_t **getBlue** ()
- static constexpr color_t **getWhite** ()
- static constexpr color_t **getBlack** ()
- static constexpr color_t **getYellow** ()
- static constexpr color_t **getMagenta** ()
- static constexpr color_t **getCyan** ()
- static constexpr color_t **getGray** ()
- static constexpr color_t **getOrange** ()
- static constexpr color_t **getBrown** ()
- static constexpr color_t **getLightBlue** ()
- static constexpr color_t **getLightGreen** ()
- static constexpr color_t **getLightPink** ()
- static constexpr color_t **getLightYellow** ()
- static constexpr color_t **getLightGray** ()
- static constexpr color_t **getDarkGray** ()
- static constexpr color_t **getDarkRed** ()
- static constexpr color_t **getDarkGreen** ()
- static constexpr color_t **getDarkBlue** ()
- static constexpr color_t **getDarkYellow** ()

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

- App/include/RayTracer/Utils/Color.hpp

3.8 rtr::CompositeMaterial Class Reference

Inheritance diagram for rtr::CompositeMaterial:



Public Member Functions

- std::string **getPluginName** () const override
- void **addMaterial** (std::unique_ptr< AMaterial > material)
- void **applyMaterial** (Color *color) override

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

- App/include/RayTracer/Composite/Material.hpp

3.9 rtr::Core Class Reference

Classes

- class CoreException

Static Public Member Functions

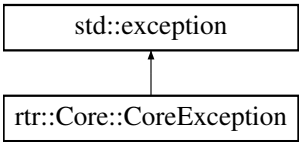
- static void **runRayTracer** (Scene &scene)

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

- App/include/RayTracer/Core.hpp

3.10 rtr::Core::CoreException Class Reference

Inheritance diagram for rtr::Core::CoreException:



Public Member Functions

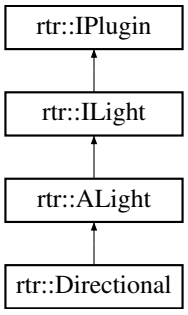
- **CoreException** (std::string msg)
- **CoreException** (const CoreException &)=delete
- CoreException & **operator=** (const CoreException &)=delete
- **CoreException** (const CoreException &&)=delete
- CoreException & **operator=** (const CoreException &&)=delete
- const char * **what** () const noexcept override

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

- App/include/RayTracer/Core.hpp

3.11 rtr::Directional Class Reference

Inheritance diagram for rtr::Directional:



Public Member Functions

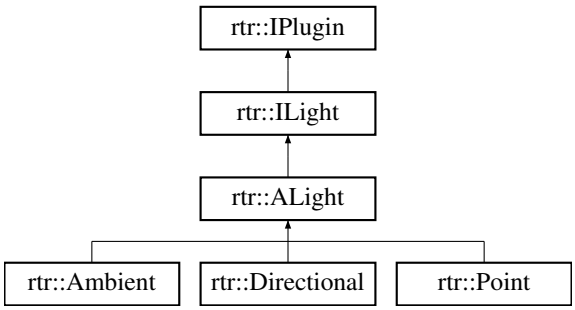
- Color **LightColor** (const Vector &normal, const Color &col) override
- std::string **getPluginName** () const override

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

- App/plugins/Light/Directional/include/RayTracer/Directional.hpp

3.12 rtr::ILight Class Reference

Inheritance diagram for rtr::ILight:



Public Member Functions

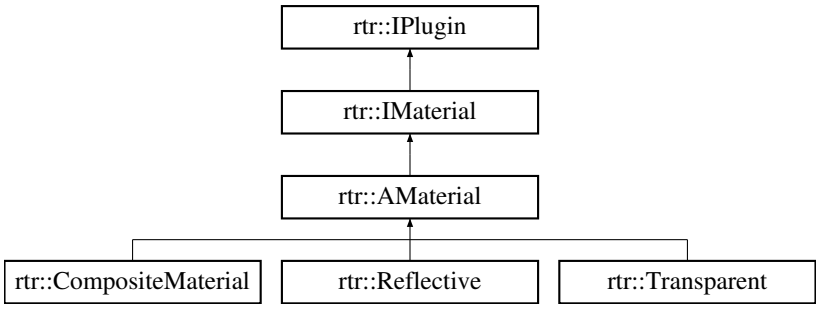
- virtual void **setType** (const LightType &type)=0
- virtual void **setIntensity** (const float &intensity)=0
- virtual Color **LightColor** (const Vector &normal, const Color &col)=0
- virtual const LightType & **getType** () const =0
- virtual Vector & **getPosition** ()=0
- virtual Vector & **getDirection** ()=0
- virtual Color & **getColor** ()=0
- virtual float & **getIntensity** ()=0

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

- App/include/RayTracer/Abstraction/ILight.hpp

3.13 rtr::IMaterial Class Reference

Inheritance diagram for rtr::IMaterial:



Public Member Functions

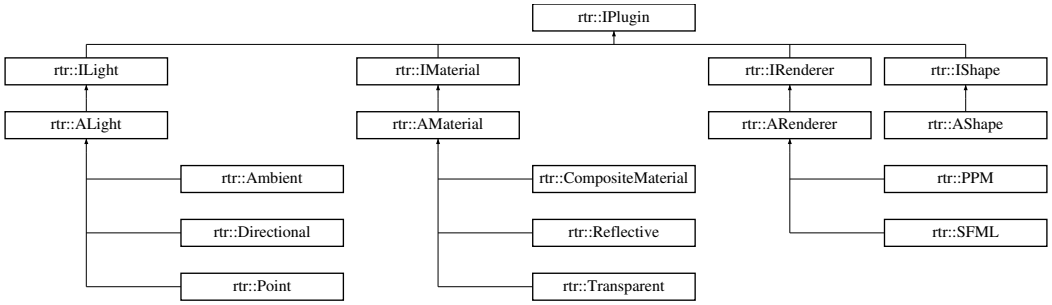
- virtual void **applyMaterial** (Color ∗color)=0
- virtual void **setType** (const MaterialType &type)=0
- virtual void **setReflectivity** (const float &reflectivity)=0
- virtual void **setTransparency** (const float &transparency)=0
- virtual const MaterialType & **getType** () const =0
- virtual Color & **getColor** ()=0
- virtual const float & **getReflectivity** () const =0
- virtual const float & **getTransparency** () const =0

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

- App/include/RayTracer/Abstraction/IMaterial.hpp

3.14 rtr::IPlugin Class Reference

Inheritance diagram for rtr::IPlugin:



Public Member Functions

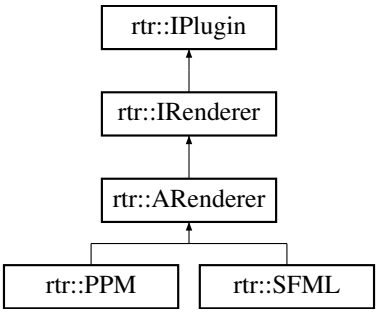
- virtual std::string **getPluginName** () const =0

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

- App/include/RayTracer/Abstraction/IPlugin.hpp

3.15 rtr::IRenderer Class Reference

Inheritance diagram for rtr::IRenderer:



Public Member Functions

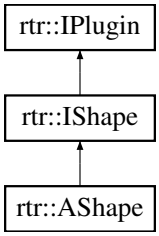
- virtual void **render** (const std::vector< std::unique_ptr< AShape >> &shapes, const std::vector< std::unique_ptr< ALight >> &lights, const Camera &camera)=0
- virtual void **setType** (const RendererType &rendererType)=0
- virtual void **setName** (const std::string &name)=0
- virtual void **setPixels** (const std::vector< std::vector< rtr::Color >> &pixels)=0
- virtual const RendererType & **getType** () const =0
- virtual const std::string & **getName** () const =0
- virtual Resolution & **getResolution** ()=0
- virtual Color & **getBackgroundColor** ()=0
- virtual std::vector< std::vector< rtr::Color > > & **getPixels** ()=0

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

- App/include/RayTracer/Abstraction/IRenderer.hpp

3.16 rtr::IShape Class Reference

Inheritance diagram for rtr::IShape:



Public Member Functions

- virtual void **setType** (const ShapeType &type)=0
- virtual void **setMaterial** (std::unique_ptr< AMaterial > material)=0
- virtual void **setRadius** (const double &radius)=0
- virtual void **setHeight** (const double &height)=0
- virtual const ShapeType & **getType** () const =0
- virtual AMaterial & **getMaterial** ()=0
- virtual Vector & **getPosition** ()=0
- virtual Vector & **getNormal** ()=0
- virtual Vector & **getRotation** ()=0
- virtual const double & **getRadius** () const =0
- virtual const double & **getHeight** () const =0
- virtual bool **hits** (std::pair< Vector, Vector > ray, RayHit &hit)=0
- virtual Vector **getDistance** (const Vector &point)=0

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

- App/include/RayTracer/Abstraction/IShape.hpp

3.17 rtr::LightFactory Class Reference

Static Public Member Functions

- static std::unique_ptr< ALight > **createLight** (const Color &color, const float &intensity)
- static std::unique_ptr< ALight > **createLight** (const LightType &type, const Color &color, const float &intensity, const Vector &vector)

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

- App/include/RayTracer/Factory/Light.hpp

3.18 rtr::MaterialFactory Class Reference

Static Public Member Functions

- static std::unique_ptr< AMaterial > **createMaterial** (const MaterialType &type, const float &floatValue)

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

- App/include/RayTracer/Factory/Material.hpp

3.19 rtr::Parser Class Reference

Classes

- class ParserException

Static Public Member Functions

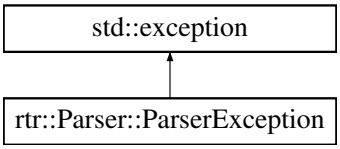
- static int **parseArgs** (const std::string &filePath)
- static std::unique_ptr< rtr::Scene > **parseFile** (const std::string &filePath)
- static void **parseRenderer** (const libconfig::Setting &renderer, Scene &scene)
- static void **parseCamera** (const libconfig::Setting &camera, Scene &scene)
- static ShapeType **parseShapeType** (const std::string &type)
- static void **parseShapes** (const libconfig::Setting &shapesSetting, Scene &scene)
- static std::unique_ptr< AMaterial > **parseMaterial** (const libconfig::Setting &materialSetting)
- static LightType **parseLightType** (const std::string &type)
- static void **parseLights** (const libconfig::Setting &lightsSetting, Scene &scene)
- template<typename T , typename ConversionFunc >
  static T **getVector** (const libconfig::Setting &setting, ConversionFunc convert)
- template<typename T >
  static T **convertInt** (const libconfig::Setting &setting)

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

- App/include/RayTracer/Parser.hpp

3.20 rtr::Parser::ParserException Class Reference

Inheritance diagram for rtr::Parser::ParserException:



Public Member Functions

- **ParserException** (std::string msg)
- **ParserException** (const ParserException &)=delete
- ParserException & **operator=** (const ParserException &)=delete
- **ParserException** (const ParserException &&)=delete
- ParserException & **operator=** (const ParserException &&)=delete
- const char * **what** () const noexcept override

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

- App/include/RayTracer/Parser.hpp

3.21 rtr::PluginLoader Class Reference

Public Types

- using **PluginCreator** = std::unique_ptr< IPlugin >(*)()

Public Member Functions

- template<typename T >
  std::unique_ptr< T > **getPlugin** (const std::string &pluginName)

Static Public Member Functions

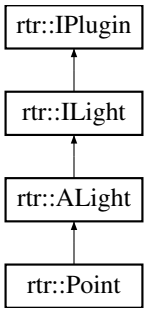
- static PluginLoader & **getInstance** ()

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

- App/include/RayTracer/Loader/Plugin.hpp

3.22 rtr::Point Class Reference

Inheritance diagram for rtr::Point:



Public Member Functions

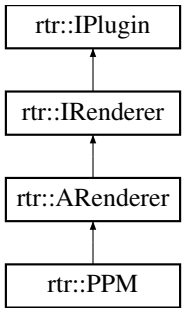
- std::string **getPluginName** () const override
- Color **LightColor** (const Vector &normal, const Color &col) override
- Vector & **getDirection** () override

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

- App/plugins/Light/Point/include/RayTracer/Point.hpp

3.23 rtr::PPM Class Reference

Inheritance diagram for rtr::PPM:



Public Member Functions

- std::string **getPluginName** () const override
- void **render** (const std::vector< std::unique_ptr< AShape >> &shapes, const std::vector< std::unique_ptr< ALight >> &lights, const Camera &camera) override
- void **writePixels** (const Color color, const std::size_t width, const std::size_t height)
- void **writeToFile** (const std::string &width, const std::string &height)
- bool **isShadowed** (const Vector &lightDir, const Vector &point, const std::vector< std::unique_ptr< AShape >> &shapes)

Static Public Member Functions

- static std::string **getHeader** (const std::string &width, const std::string &height)

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

- App/plugins/Renderer/PPM/include/RayTracer/PPM.hpp

3.24 rtr::RayHit Class Reference

Public Member Functions

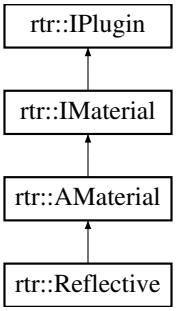
- const ray_hit_t & **getRayHit** () const noexcept
- void **setRayHit** (const ray_hit_t &ray_hit) noexcept
- void **setRayHit** (const Vector &point, const Vector &normal, const double &distance) noexcept
- void **setPoint** (const Vector &point) noexcept
- void **setNormal** (const Vector &normal) noexcept
- void **setDistance** (const double &distance) noexcept

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

- App/include/RayTracer/Utils/RayHit.hpp

3.25 rtr::Reflective Class Reference

Inheritance diagram for rtr::Reflective:



Public Member Functions

- void **applyMaterial** (Color *color) override
- std::string **getPluginName** () const override

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

- App/plugins/Material/Reflective/include/RayTracer/Reflective.hpp

3.26 rtr::RendererFactory Class Reference

Static Public Member Functions

- static std::unique_ptr< ARenderer > **createRenderer** (const RendererType &type, const std::string &name, const Resolution &resolution, const Color &backgroundColor)

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

- App/include/RayTracer/Factory/Renderer.hpp

3.27 rtr::Resolution Class Reference

Public Member Functions

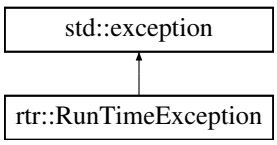
- **Resolution** (const uint16_t &width, const uint16_t &height)
- **Resolution** (const resolution_t &resolution)
- void **setWidth** (const uint16_t &width)
- void **setHeight** (const uint16_t &height)
- void **setResolution** (const uint16_t &width, const uint16_t &height)
- void **setResolution** (const resolution_t &resolution)
- uint16_t **getWidth** () const
- uint16_t **getHeight** () const
- resolution_t **getValue** () const

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

- App/include/RayTracer/Utils/Resolution.hpp

3.28 rtr::RunTimeException Class Reference

Inheritance diagram for rtr::RunTimeException:



Public Member Functions

- **RunTimeException** (std::string msg)
- **RunTimeException** (const RunTimeException &)=delete
- RunTimeException & **operator=** (const RunTimeException &)=delete
- **RunTimeException** (const RunTimeException &&)=delete
- RunTimeException & **operator=** (const RunTimeException &&)=delete
- const char * **what** () const noexcept override

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

- App/include/RayTracer/Exception/RunTime.hpp

3.29 rtr::Scene Class Reference

Public Member Functions

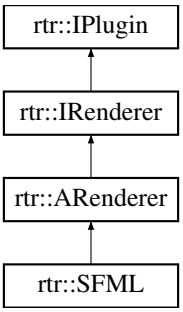
- void **setCamera** (const Camera &camera)
- void **setRenderer** (std::unique_ptr< ARenderer > renderer)
- void **addShape** (std::unique_ptr< AShape > shape)
- void **addLight** (std::unique_ptr< ALight > light)
- Camera & **getCamera** ()
- const std::unique_ptr< ARenderer > & **getRenderer** () const
- const std::vector< std::unique_ptr< AShape > > & **getShapes** () const
- const std::vector< std::unique_ptr< ALight > > & **getLights** () const

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

- App/include/RayTracer/Scene/Scene.hpp

3.30 rtr::SFML Class Reference

Inheritance diagram for rtr::SFML:



Public Member Functions

- std::string **getPluginName** () const override
- void **render** (const std::vector< std::unique_ptr< AShape >> &shapes, const std::vector< std::unique_ptr< ALight >> &lights, const Camera &camera) override

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

- App/plugins/Renderer/SFML/include/RayTracer/SFML.hpp

3.31 rtr::ShapeFactory Class Reference

Static Public Member Functions

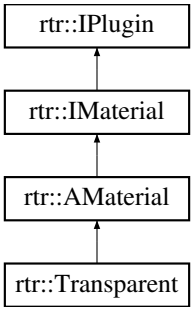
- static std::unique_ptr< AShape > **createShape** (const Vector &position, const Vector &normal)
- static std::unique_ptr< AShape > **createShape** (const Vector &position, const double &radius)
- static std::unique_ptr< AShape > **createShape** (const ShapeType &type, const Vector &position, const Vector &rotation, const double &radius, const double &height)

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

- App/include/RayTracer/Factory/Shape.hpp

3.32 rtr::Transparent Class Reference

Inheritance diagram for rtr::Transparent:



Public Member Functions

- void **applyMaterial** (Color *color) override
- std::string **getPluginName** () const override

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

- App/plugins/Material/Transparent/include/RayTracer/Transparent.hpp

3.33 rtr::Vector Class Reference

Public Member Functions

- **Vector** (const double x, const double y, const double z)
- **Vector** (const vector_t position)
- void **setX** (const double x)
- void **setY** (const double y)
- void **setZ** (const double z)
- void **setVector** (const double x, const double y, const double z)
- void **setVector** (const vector_t &position)
- double **getX** () const
- double **getY** () const
- double **getZ** () const
- vector_t **getValue** () const
- Vector **operator+** (const Vector &other) const
- Vector **operator+** (const double scalar) const
- Vector **operator-** (const Vector &other) const
- Vector **operator**∗ (const Vector &other) const
- Vector **operator**∗ (const double scalar) const
- Vector **operator**/ (const double scalar) const
- double **length** () const
- double **dot** (const Vector &other) const
- Vector **cross** (const Vector &other) const
- Vector **normalize** () const

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

- App/include/RayTracer/Utils/Vector.hpp

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