Arbitrary order virtual element method for linear elastostatics

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1 Class Index

1.1 Class List

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

2 Class Documentation

2.1 geometry::Edge< PointType > Class Template Reference

Public Member Functions

- **Edge** (const PointType &point1, const PointType &point2, bool _flipped=false)
- void **setOtherHalfEdge** (const Edge< PointType > &otherEdge)
- Edge< PointType > & **getOtherHalfEdge** () const
- void **update** ()
- void **setId** (IndexType _id)
- const IndexType & **getId** () const
- const real & **getLength** () const
- const PointType **getDirection** () const
- const PointType & **operator[ ]** (IndexType index) const
- bool **operator<** (const Edge< PointType > &other) const
- bool **operator==** (const Edge< PointType > &other) const

Friends

- std::ostream & **operator**<< (std::ostream &os, const Edge< PointType > &edge)

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

- Mesh/edge.hpp

2.2 Mesh< PointType, EdgeType, PolygonType, PolyhedronType > Class Template Reference

Public Member Functions

- **Mesh** (const std::string &filename)
- std::size_t **numVertices** () const
- std::size_t **numEdges** () const
- std::size_t **numPolygons** () const
- std::size_t **numPolyhedra** () const
- const PointType & **getVertex** (std::size_t index) const
- const EdgeType & **getEdge** (IndexType index) const
- const PolygonType & **getPolygon** (IndexType index) const
- const PolyhedronType & **getPolyhedron** (std::size_t index) const
- const std::map< std::size_t, PointType > & **getVertices** () const
- const std::map< IndexType, EdgeType > **getEdges** () const
- const std::map< IndexType, PolygonType > **getPolygons** () const
- const std::map< std::size_t, PolyhedronType > & **getPolyhedra** () const
- const real & **getSize** () const
- void **print** () const

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

- Mesh/mesh.hpp

2.3 geometry::Point< Args > Class Template Reference

Public Member Functions

- Point ()

  Default constructor to initialize coordinates to 0.
- Point (Args... args)

  Construct a new Point object.
- constexpr std::size_t **getDimension** () const
- void **setId** (IndexType _id)
- const IndexType & **getId** () const
- const std::array< real, sizeof...(Args)> **getCoordinates** () const
- const real & **operator[ ]** (std::size_t index) const
- auto **operator*** (const real &scalar) const
- template<size_t... Indices>

  auto **multiplyByScalar** (real scalar, std::index_sequence< Indices... >) const
- auto **operator/** (const real &scalar) const

- template<typename... OtherArgs>
  auto **operator+** (const Point< OtherArgs... > &other) const
- template<typename... OtherArgs>
  auto **operator-** (const Point< OtherArgs... > &other) const
- template<typename... OtherArgs>
  auto **piecewiseMultiply** (const Point< OtherArgs... > &other) const
- template<typename... OtherArgs, size_t... Indices, typename Operation >
  auto **binaryOperation** (const Point< OtherArgs... > &other, Operation operation, std::index_sequence< Indices... >) const
- template<typename... OtherArgs>
  auto **dot** (const Point< OtherArgs... > &other) const
- template<typename... OtherArgs>
  auto **cross** (const Point< OtherArgs... > &other) const
- template<typename... OtherArgs>
  auto **distance** (const Point< OtherArgs... > &other) const
- auto **norm** () const
- auto **normalize** () const
- bool **operator<** (const Point< Args... > &other) const
- template<typename... OtherArgs>
  bool **operator==** (const Point< OtherArgs... > &other) const

Friends

- auto **operator*** (const real &scalar, const Point &point)
- std::ostream & **operator<<** (std::ostream &os, const Point< Args... > &point)

2.3.1 Constructor & Destructor Documentation

2.3.1.1 Point() `template<typename... Args>`

```
geometry::Point< Args >::Point (
            Args... args ) [inline]
```

Construct a new Point object.

Parameters

args	coordinates of the point

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

- Mesh/point.hpp

2.4 geometry::Polygon< EdgeType > Class Template Reference

Public Member Functions

- **Polygon** (const std::initializer_list< EdgeType > &edges_, bool _orientation=false)

- void **setOtherPolygon** (const Polygon< EdgeType > &otherPolygon_)
- Polygon< EdgeType > & **getOtherPolygon** () const
- void **setOrientation** (bool _orientation)
- void **addEdge** (const EdgeType &edge)
- void **setId** (IndexType _id)
- const IndexType & **getId** () const
- std::size_t **numEdges** () const
- const EdgeType & **getEdge** (std::size_t index) const
- const EdgeType & **operator[ ]** (IndexType index) const
- const EdgeType & **getPositiveEdge** (std::size_t index) const
- bool **areEdgesConsistent** () const
- void **computeProperties** ()
- void **computeOutwardNormalArea** ()
- const Point3D **getOutwardNormal** () const
- const Point3D **get_e_x** () const
- const Point3D **get_e_y** () const
- real **getArea** () const
- void **computeDiameter** ()
- real **getDiameter** () const
- bool **operator<** (const Polygon< EdgeType > &other) const
- bool **operator==** (const Polygon< EdgeType > &other) const

Friends

- std::ostream & **operator<<** (std::ostream &os, const Polygon< EdgeType > &polygon)

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

- Mesh/polygon.hpp

2.5 geometry::Polyhedron< PolygonType > Class Template Reference

Public Member Functions

- **Polyhedron** (const std::initializer_list< PolygonType > &polygonsWithoutDirection)
- void **addPolygon** (const PolygonType &polygon)
- void **setId** (std::size_t _id)
- const std::size_t & **getId** () const
- std::size_t **numPolygons** () const
- const PolygonType & **getPolygon** (std::size_t index) const
- const PolygonType & **operator[ ]** (std::size_t index) const
- void **computeDiameter** ()
- real **getDiameter** () const

Friends

- std::ostream & **operator<<** (std::ostream &os, const Polyhedron< PolygonType > &polyhedron)

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

- Mesh/polyhedron.hpp

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