EF2:Peers_El

0.1

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Contents

Chapter 1

Desarrolladores EF2

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Chapter 2

Changes in EF2:Peers_El Version 1.1

Member Bases_func_Maxwell (matlabtypesubstitute u, matlabtypesubstitute i, matlabtypesubstitute j, matlabtypesubstitute x)

(Catalina Dominguez, 2012-04-16)

Chapter 3

Class Index

3.1 Class Hierarchy

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

Chapter 4

Class Index

4.1 Class List

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

Chapter 5

File Index

5.1 File List

Here is a list of all files with brief descriptions:

Chapter 6

Class Documentation

6.1 cell Class Reference

A MatLab cell array or matrix.

6.1.1 Detailed Description

A MatLab cell array or matrix.

This class is an artificially created class in doxygen to allow more precise type declarations

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

- class_substitutes.c

6.2 char Class Reference

A MatLab character array.

6.2.1 Detailed Description

A MatLab character array.

This class is an artificially created class in doxygen to allow more precise type declarations and represents string-like types.

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

- class_substitutes.c

6.3 colvec Class Reference

A matlab column vector.

6.3.1 Detailed Description

A matlab column vector.

This class is an artificially created class in doxygen to allow more precise type declarations

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

- class_substitutes.c

6.4 double Class Reference

A double value.

6.4.1 Detailed Description

A double value.

This class is an artificially created class in doxygen to allow more precise type declarations. The MatLab type associated with this class is double.

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

- class_substitutes.c

6.5 function_handle Class Reference

A MatLab function handle.

6.5.1 Detailed Description

A MatLab function handle.

This class is an artificially created class in doxygen to allow more precise type declarations

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

- class_substitutes.c

6.6 handle Class Reference

Matlab's base handle class (documentation generation substitute)

Public Attributes

- matlabtypesubstitute addlistener

  Creates a listener for the specified event and assigns a callback function to execute when the event occurs.
- matlabtypesubstitute notify

  Broadcast a notice that a specific event is occurring on a specified handle object or array of handle objects.
- matlabtypesubstitute delete

  Handle object destructor method that is called when the object's lifecycle ends.
- matlabtypesubstitute disp

  Handle object disp method which is called by the display method. See the MATLAB disp function.
- matlabtypesubstitute display

  Handle object display method called when MATLAB software interprets an expression returning a handle object that is not terminated by a semicolon. See the MATLAB display function.
- matlabtypesubstitute findobj

  Finds objects matching the specified conditions from the input array of handle objects.
- matlabtypesubstitute findprop

  Returns a meta.property objects associated with the specified property name.
- matlabtypesubstitute fields

  Returns a cell array of string containing the names of public properties.
- matlabtypesubstitute fieldnames

  Returns a cell array of string containing the names of public properties. See the MATLAB fieldnames function.
- matlabtypesubstitute isvalid

  Returns a logical array in which elements are true if the corresponding elements in the input array are valid handles. This method is Sealed so you cannot override it in a handle subclass.
- matlabtypesubstitute eq

  Relational functions example. See details for more information.
- matlabtypesubstitute transpose

  Transposes the elements of the handle object array.
- matlabtypesubstitute permute

  Rearranges the dimensions of the handle object array. See the MATLAB permute function.
- matlabtypesubstitute reshape

  hanges the dimensions of the handle object array to the specified dimensions. See the MATLAB reshape function.
- matlabtypesubstitute sort

  ort the handle objects in any array in ascending or descending order.

6.6.1 Detailed Description

Matlab's base handle class (documentation generation substitute)

```
As doxygen does not know the class "handle" from itself, many classes do not get rendered within the do
This workaround guarantees a correct (also graphical) representation of the class hierarchy.
```

Note here that by having the type handle it could also mean to have a vector or matrix of handles.

6.6.2 Member Data Documentation

6.6.2.1 matlabtypesubstitute handle::addlistener

Creates a listener for the specified event and assigns a callback function to execute when the event occurs.

See also

notify

6.6.2.2 matlabtypesubstitute handle::delete

Handle object destructor method that is called when the object's lifecycle ends.

6.6.2.3 matlabtypesubstitute handle::disp

Handle object disp method which is called by the display method. See the MATLAB disp function.

6.6.2.4 matlabtypesubstitute handle::display

Handle object display method called when MATLAB software interprets an expression returning a handle object that is not terminated by a semicolon. See the MATLAB display function.

6.6.2.5 matlabtypesubstitute handle::eq

Relational functions example. See details for more information.

Other possible relational operators:

-ne -lt -le -gt -ge

Relational functions return a logical array of the same size as the pair of input handle object arrays. Comparisons use a number associated with each handle. You can assume that the same two handles will compare as equal and the repeated comparison of any two handles will yield the same result in the same MATLAB session. Different handles are always not-equal. The order of handles is purely arbitrary, but consistent.

6.6.2.6 matlabtypesubstitute handle::fieldnames

Returns a cell array of string containing the names of public properties. See the MATLAB fieldnames function.

6.6.2.7 matlabtypesubstitute handle::fields

Returns a cell array of string containing the names of public properties.

6.6.2.8 matlabtypesubstitute handle::findobj

Finds objects matching the specified conditions from the input array of handle objects.

6.6.2.9 matlabtypesubstitute handle::findprop

Returns a meta.property objects associated with the specified property name.

6.6.2.10 matlabtypesubstitute handle::isvalid

Returns a logical array in which elements are true if the corresponding elements in the input array are valid handles. This method is Sealed so you cannot override it in a handle subclass.

6.6.2.11 matlabtypesubstitute handle::notify

Broadcast a notice that a specific event is occurring on a specified handle object or array of handle objects.

6.6.2.12 matlabtypesubstitute handle::permute

Rearranges the dimensions of the handle object array. See the MATLAB permute function.

6.6.2.13 matlabtypesubstitute handle::reshape

hanges the dimensions of the handle object array to the specified dimensions. See the MATLAB reshape function.

6.6.2.14 matlabtypesubstitute handle::sort

ort the handle objects in any array in ascending or descending order.

The order of handles is purely arbitrary, but reproducible in a given MATLAB session. See the MATLAB sort function.

6.6.2.15 matlabtypesubstitute handle::transpose

Transposes the elements of the handle object array.

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

- class_substitutes.c

6.7 integer Class Reference

An integer value.

6.7.1 Detailed Description

An integer value.

This class is an artificially created class in doxygen to allow more precise type declarations. Matlab types associated with this class are all int-types (int8, uint8 etc).

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

- class_substitutes.c

6.8 logical Class Reference

A boolean value.

6.8.1 Detailed Description

A boolean value.

This class can be seen as synonym for boolean values/flags used inside classes. In order to stick with matlab conventions/datatypes, this class was named logical instead of bool or boolean.

This class is an artificially created class in doxygen to allow more precise type declarations

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

- class_substitutes.c

6.9 rowvec Class Reference

A matlab row vector.

6.9.1 Detailed Description

A matlab row vector.

This class is an artificially created class in doxygen to allow more precise type declarations

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

- class_substitutes.c

6.10 struct Class Reference

A MatLab struct.

6.10.1 Detailed Description

A MatLab struct.

This class is an artificially created class in doxygen to allow more precise type declarations

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

- class_substitutes.c

6.11 varargin Class Reference

A variable number of input arguments.

6.11.1 Detailed Description

A variable number of input arguments.

This class is an artificially created class in doxygen to allow more precise type declarations.

For more information about the varargin argument see the `MatLab documentation on varargin`.

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

- class_substitutes.c

6.12 varargout Class Reference

A variable number of output arguments.

6.12.1 Detailed Description

A variable number of output arguments.

This class is an artificially created class in doxygen to allow more precise type declarations.

For more information about the varargout argument see the `MatLab documentation on varargout`.

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

- class_substitutes.c

Chapter 7

File Documentation

7.1 auxiliar.m File Reference

Functions

- noret::substitute genbasftn (matlabtypesubstitute u, matlabtypesubstitute i, matlabtypesubstitute jk)

7.1.1 Function Documentation

7.1.1.1 noret::substitute genbasftn (matlabtypesubstitute *u,* matlabtypesubstitute *i,* matlabtypesubstitute *jk*)

7.2 Bases_func_Maxwell.m File Reference

Calcula el valor en el punto x de la función base ϕ_j^i (elementos de Whitney 2D) definido por

$$\begin{aligned} \phi_1^i &= \lambda_1 \cdot \nabla\lambda_2 - \lambda_2 \cdot \nabla\lambda_1 \\ \phi_2^i &= \lambda_1 \cdot \nabla\lambda_3 - \lambda_3 \cdot \nabla\lambda_1 \\ \phi_3^i &= \lambda_2 \cdot \nabla\lambda_3 - \lambda_3 \cdot \nabla\lambda_2 \end{aligned}$$

.

Functions

- mlhsInnerSubst
  $<$ matlabtypesubstitute, v $>$ Bases_func_Maxwell (matlabtypesubstitute u, matlabtypesubstitute i, matlabtypesubstitute j, matlabtypesubstitute x)

Calcula el valor en el punto x de la función base ϕ_j^i (elementos de Whitney 2D) definido por

$$\begin{aligned}\phi_1^i &= \lambda_1 \cdot \nabla\lambda_2 - \lambda_2 \cdot \nabla\lambda_1 \\ \phi_2^i &= \lambda_1 \cdot \nabla\lambda_3 - \lambda_3 \cdot \nabla\lambda_1 \\ \phi_3^i &= \lambda_2 \cdot \nabla\lambda_3 - \lambda_3 \cdot \nabla\lambda_2\end{aligned}$$

.

7.2.1 Detailed Description

Calcula el valor en el punto x de la función base ϕ_j^i (elementos de Whitney 2D) definido por

$$\begin{aligned}\phi_1^i &= \lambda_1 \cdot \nabla\lambda_2 - \lambda_2 \cdot \nabla\lambda_1 \\ \phi_2^i &= \lambda_1 \cdot \nabla\lambda_3 - \lambda_3 \cdot \nabla\lambda_1 \\ \phi_3^i &= \lambda_2 \cdot \nabla\lambda_3 - \lambda_3 \cdot \nabla\lambda_2\end{aligned}$$

.

7.2.2 Function Documentation

7.2.2.1 mlhsInnerSubst< matlabtypesubstitute, v > Bases_func_Maxwell (matlabtypesubstitute *u*, matlabtypesubstitute *i*, matlabtypesubstitute *j*, matlabtypesubstitute *x*)

Calcula el valor en el punto x de la función base ϕ_j^i (elementos de Whitney 2D) definido por

$$\begin{aligned}\phi_1^i &= \lambda_1 \cdot \nabla\lambda_2 - \lambda_2 \cdot \nabla\lambda_1 \\ \phi_2^i &= \lambda_1 \cdot \nabla\lambda_3 - \lambda_3 \cdot \nabla\lambda_1 \\ \phi_3^i &= \lambda_2 \cdot \nabla\lambda_3 - \lambda_3 \cdot \nabla\lambda_2\end{aligned}$$

.

Author

Ricardo Prato

Date

2012-03-20

Change in 1.1 (Catalina Dominguez, 2012-04-16)

Parameters

u	**Estructura**
i	Id del elemento en la triangulación
j	Id de la función base
x	punto

Return values

v	$\phi_j^i(x)$

Required fields of u:

- `u.alfa --` coordenadas baricentricas asociadas al elemento i

7.3 carst_basftn.m File Reference

Functions

- noret::substitute carst_basftn (matlabtypesubstitute u, matlabtypesubstitute ik, matlabtypesubstitute jk)
- mlhsInnerSubst
  < matlabtypesubstitute, True > mtoc_subst_carst_basftn_m_tsbus_cotm_test_line (matlabtypesubstitute P, matlabtypesubstitute P1, matlabtypesubstitute P2)

7.3.1 Function Documentation

7.3.1.1 noret::substitute carst_basftn (matlabtypesubstitute *u,* matlabtypesubstitute *ik,* matlabtypesubstitute *jk*)

7.3.1.2 mlhsInnerSubst<matlabtypesubstitute,True> mtoc_subst_carst_basftn_m_tsbus_cotm_test_line (matlabtypesubstitute *P,* matlabtypesubstitute *P1,* matlabtypesubstitute *P2*)

7.4 class_substitutes.c File Reference

Classes

- class matrix
  A matlab matrix.
- class sparsematrix
  A matlab sparse matrix.
- class handle
  Matlab's base handle class (documentation generation substitute)

7.5 developers.c File Reference

7.6 funciones.m File Reference

Functions

- mlhsInnerSubst
  < matlabtypesubstitute, value > funciones (matlabtypesubstitute rhs)

7.6.1 Function Documentation

7.6.1.1 mlhsInnerSubst<matlabtypesubstitute,value> funciones (matlabtypesubstitute *rhs*)

7.7 genbasftn.m File Reference

Functions

- noret::substitute genbasftn (matlabtypesubstitute u, matlabtypesubstitute i, matlabtypesubstitute jk)

7.7.1 Function Documentation

7.7.1.1 noret::substitute genbasftn (matlabtypesubstitute *u,* matlabtypesubstitute *i,* matlabtypesubstitute *jk*)

7.8 inside_triangle.m File Reference

inside_triangle is used to check if a point P is inside the triangle P1P2P3 or not.

Functions

- mlhsInnerSubst
  < matlabtypesubstitute, True > inside_triangle (matlabtypesubstitute P, matlabtypesubstitute P1, matlabtypesubstitute P2, matlabtypesubstitute P3)

  inside_triangle is used to check if a point P is inside the triangle P1P2P3 or not.

7.8.1 Detailed Description

inside_triangle is used to check if a point P is inside the triangle P1P2P3 or not.

7.8.2 Function Documentation

7.8.2.1 mlhsInnerSubst< matlabtypesubstitute, True > inside_triangle (matlabtypesubstitute *P,* matlabtypesubstitute *P1,* matlabtypesubstitute *P2,* matlabtypesubstitute *P3*)

inside_triangle is used to check if a point P is inside the triangle P1P2P3 or not.

Inputs: P, P1, P2 and P3 are vectors of length 2 or three of the form [x y z] or [x y]

Output: True True=1 => P is on or inside P1P2P3 True=0 => P is outside P1P2P3

Example

True=inside_triangle([0.5 0.5],[0 0],[0 2],[2 0]);

The following algorithm is implemented If P is ON or INSIDE the triangle

```
Area(PP1P2) + Area(PP2P3) + Area(PP3P1) = Area(P1P2P3)
```

If P is OUTSIDE then,

```
Area(PP1P2) + Area(PP2P3) + Area(PP3P1) > Area(P1P2P3)
```

Area of a triangle can be found using the determinant

```
Area = abs(1/2 * |x1  y1  1| )
                 |x2  y2  1|
                 |x3  y3  1|
```

Parameters

P	P
P1	P1
P2	P2
P3	P3

Return values

True	True

7.9 intextnodes.m File Reference

Functions

- mlhsInnerSubst
  < matlabtypesubstitute, u > intextnodes (matlabtypesubstitute u)
- mlhsInnerSubst
  < matlabtypesubstitute, alfa > mtoc_subst_intextnodes_m_tsbus_cotm_invM (matlabtypesubstitute p, matlabtypesubstitute q, matlabtypesubstitute r)

7.9.1 Function Documentation

7.9.1.1 mlhsInnerSubst<matlabtypesubstitute,u> intextnodes (matlabtypesubstitute *u*)

7.9.1.2 mlhsInnerSubst<matlabtypesubstitute,alfa> mtoc_subst_intextnodes_m_tsbus_cotm_invM (matlabtypesubstitute *p*, matlabtypesubstitute *q*, matlabtypesubstitute *r*)

7.10 main.m File Reference

fafdfdfsdfsdfs

$$|I_2| = \left| \int_0^T \psi(t) \left\{ u(a,t) - \int_{\gamma(t)}^{a} \frac{d\theta}{k(\theta,t)} \int_a^{\theta} c(\xi) u_t(\xi,t)\, d\xi \right\} dt \right|$$

Functions

- mlhsInnerSubst
  < matlabtypesubstitute, u > main (matlabtypesubstitute iter, matlabtypesubstitute rhs, matlabtypesubstitute mode)

  fafdfdfsdfsdfs

  $$|I_2| = \left| \int_0^T \psi(t) \left\{ u(a,t) - \int_{\gamma(t)}^{a} \frac{d\theta}{k(\theta,t)} \int_a^{\theta} c(\xi) u_t(\xi,t)\, d\xi \right\} dt \right|$$

7.10.1 Detailed Description

fafdfdfsdfsdfs

$$|I_2| = \left| \int_0^T \psi(t) \left\{ u(a,t) - \int_{\gamma(t)}^{a} \frac{d\theta}{k(\theta,t)} \int_a^{\theta} c(\xi) u_t(\xi,t)\, d\xi \right\} dt \right|$$

7.10.2 Function Documentation

7.10.2.1 mlhsInnerSubst< matlabtypesubstitute, u > main (matlabtypesubstitute *iter*, matlabtypesubstitute *rhs*, matlabtypesubstitute *mode*)

fafdfdfsdfsdfs

$$|I_2| = \left| \int_0^T \psi(t) \left\{ u(a,t) - \int_{\gamma(t)}^{a} \frac{d\theta}{k(\theta,t)} \int_a^{\theta} c(\xi) u_t(\xi,t)\, d\xi \right\} dt \right|$$

Parameters

iter	iter
rhs	rhs
mode	mode

Return values

u	u

7.11 malla01.m File Reference

Functions

- mlhsInnerSubst
  < matlabtypesubstitute, u > malla01 (matlabtypesubstitute mode)

7.11.1 Function Documentation

7.11.1.1 mlhsInnerSubst<matlabtypesubstitute,u> malla01 (matlabtypesubstitute *mode*)

7.12 provideGeometricData.m File Reference

Functions

- mlhsSubst< mlhsInnerSubst
  < matlabtypesubstitute,
  edge2nodes >,mlhsInnerSubst
  < matlabtypesubstitute,
  element2edges >,mlhsInnerSubst
  < matlabtypesubstitute,
  varargout > > provideGeometricData (matlabtypesubstitute elements, matlabtypesubstitute varargin)

7.12.1 Function Documentation

7.12.1.1 mlhsSubst<mlhsInnerSubst<matlabtypesubstitute,edge2nodes> ,mlhsInnerSubst<matlabtypesubstitute,element2edges> ,mlhsInnerSubst<matlabtypesubstitute,varargout> > provideGeometricData (matlabtypesubstitute *elements,* matlabtypesubstitute *varargin*)

7.13 refineRGB.m File Reference

cprintf([1 0 0],`mami estoy vivo`)

Functions

- mlhsSubst< mlhsInnerSubst < matlabtypesubstitute, coordinates >,mlhsInnerSubst < matlabtypesubstitute, newElements >,mlhsInnerSubst < matlabtypesubstitute, varargout > > refineRGB (matlabtypesubstitute coordinates, matlabtypesubstitute elements, matlabtypesubstitute varargin)

  cprintf([1 0 0],`mami estoy vivo`)

7.13.1 Detailed Description

cprintf([1 0 0],`mami estoy vivo`)

7.13.2 Function Documentation

7.13.2.1 mlhsSubst< mlhsInnerSubst< matlabtypesubstitute, coordinates >,mlhsInnerSubst< matlabtypesubstitute, newElements >,mlhsInnerSubst< matlabtypesubstitute, varargout > > refineRGB (matlabtypesubstitute *coordinates,* matlabtypesubstitute *elements,* matlabtypesubstitute *varargin*)

cprintf([1 0 0],`mami estoy vivo`)

Parameters

coordinates	coordinates
elements	elements
varargin	varargin

Return values

coordinates	coordinates
newElements	newElements
varargout	varargout

7.14 shownu.m File Reference

Functions

- noret::substitute shownu (matlabtypesubstitute elements, matlabtypesubstitute nodes)

7.14.1 Function Documentation

7.14.1.1 noret::substitute shownu (matlabtypesubstitute *elements,* matlabtypesubstitute *nodes*)