LUA Scripting dla FEMM 4.2

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Wstęp

- http://www.lua.org
- clearconsole()
- messagebox(„wiadomość_bez_polskich_liter")

- Separator współrzędnych: ,
- Separator części dziesiętnych: .

- Problem magnetostatyczny – przedrostek: „m”
- Problem elektrostatyczny – przedrostek: „e”
- Problem cieplny– przedrostek: „h”
- Problem elektro-przepływowy – przedrostek: „c”

- Pre processor – przedrostek: „i”
- Post processor – przedtostek: „o”

„mi_” oraz „mo_”

- Pre processor:
  - mi_addmaterial
  - mi_modifymaterial
  - mi_addpointprop
- Post processor
  - mo_getpointvalues
  - mo_lineintegral
  - mo_blockintegral

Pre processor

Polecenia widoku

- mi_showgrid()
- mi_hidegrid()
- mi_grid_snap(„on” *lub* „off”)
- mi_setgrid(density,"type")

- mi_zoomnatural()
- mi_zoomout()
- mi_zoomin()

Rysowanie „add”

- mi_addnode(x,y)
- mi_addsegment(x1,y1,x2,y2)
- mi_addblocklabel(x,y) Add a new block label at (x,y)
- mi_addarc(x1,y1,x2,y2,angle,maxseg)

Usuwanie „deleteselected”

- mi_deleteselected
- mi_deleteselectednodes
- mi_deleteselectedlabels
- mi_deleteselectedsegments
- mi_deleteselectedarcsegments

Zaznaczanie „select”

- mi_clearselected()
- mi_selectsegment(x,y)
- mi_selectnode(x,y)
- mi_selectlabel(x,y)
- mi_selectarcsegment(x,y)
- mi_selectgroup(n)

Polecenia edycji

- mi_copyrotate(bx, by, angle, copies, (editaction))
- mi_copytranslate(dx, dy, copies, (editaction))
- mi_moverotate(bx,by,shiftangle (editaction))
- mi_movetranslate(dx,dy,(editaction))
- mi_scale(bx,by,scalefactor,(editaction))
- mi_mirror(x1,y1,x2,y2,(editaction))

Etykietowanie „set___prop”

- mi_setnodeprop("propname",groupno)
- mi_setblockprop("blockname", automesh, meshsize, "incircuit", magdirection, group, turns)
- mi_setsegmentprop("propname", elementsize, automesh, hide, group)
- mi_setarcsegmentprop(maxsegdeg, "propname", hide, group)
- mi_setgroup(n)

Edytowanie ustawień

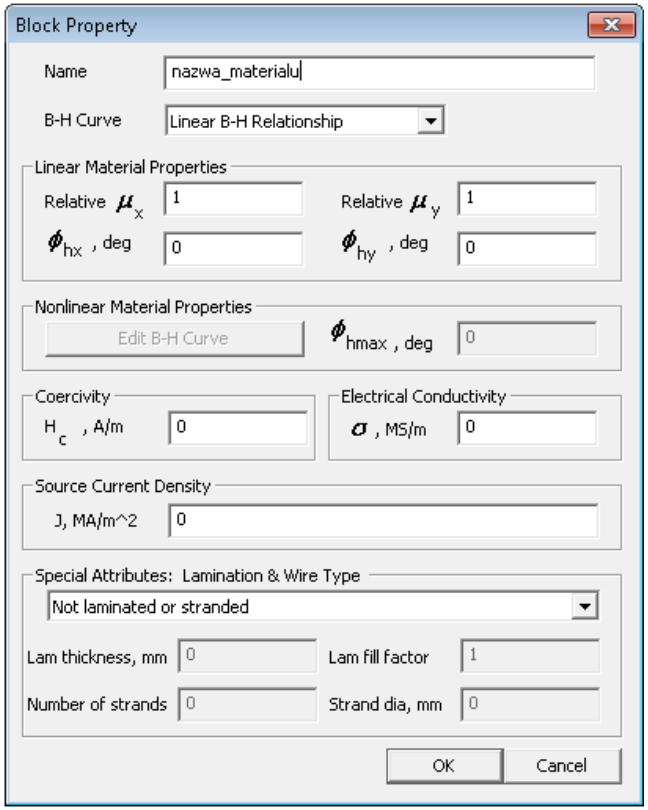
- mi_seteditmode(___)
  - "nodes"
  - "segments"
  - "arcsegments"
  - "blocks”
  - "group"

Zapisywanie / meshowanie / generowanie obliczeń

- mi_analyze()
- mi_loadsolution()
- mi_saveas(„nazwa_pliku”)
- mi_createmesh()
- mi_showmesh()

Właściwości obiektu

- mi_getmaterial("nazwa_materiału")
- mi_addmaterial("nazwa_materiału", mu_x, mu_y, H_c, J, Cduct, Lam_d, Phi_hmax, lam_fill, LamType, Phi_hx, Phi_hy, NStrands, WireD)



Modyfikowanie materiałów

- mi_modifymaterial(„nazwa_materiału",propnum,value)

propnum	Symbol	Description
0	BlockName	Name of the material
1	μ_x	x (or r) direction relative permeability
2	μ_y	y (or z) direction relative permeability
3	H_c	Coercivity, Amps/Meter
4	J_r	Source current density, MA/m^2
5	σ	Electrical conductivity, MS/m
6	d_{lam}	Lamination thickness, mm
7	ϕ_{hmax}	Hysteresis lag angle for nonlinear problems, degrees
8	LamFill	Iron fill fraction
9	LamType	0 = None/In plane, 1 = parallel to x, 2=parallel to y
10	ϕ_{hx}	Hysteresis lag in x-direction for linear problems, degrees
11	ϕ_{hy}	Hysteresis lag in y-direction for linear problems, degrees

Warunki brzegowe

- mi_addboundprop(„propname", A0, A1, A2, Phi, Mu, Sig, c0, c1, BdryFormat)
- mi_modifyboundprop("nazwa_warunku",propnum,value)

propnum	Symbol	Description
0	BdryName	Name of boundary property
1	A_0	Prescribed A parameter
2	A_1	Prescribed A parameter
3	A_2	Prescribed A parameter
4	ϕ	Prescribed A phase
5	μ	Small skin depth relative permeability
6	σ	Small skin depth conductivity, MS/m
7	c_0	Mixed BC parameter
8	c_1	Mixed BC parameter
9	BdryFormat	Type of boundary condition: 0 = Prescribed A 1 = Small skin depth 2 = Mixed 3 = Strategic Dual Image 4 = Periodic 5 = Antiperiodic

Post processor

Zaznaczanie punktu, konturu, powierzchni

- mo_seteditmode(***)
  - * point
  - * contour
  - * area

- mo_groupselectblock(nr_grupy)
- mo_clearblock()
- mo_clearcontour()

Wynik z całki powierzchniowej

- mo_blockintegral (type)

Type	Definition
0	$A \cdot J$
1	A
2	Magnetic field energy
3	Hysteresis and/or lamination losses
4	Resistive losses
5	Block cross-section area
6	Total losses
7	Total current
8	Integral of B_x (or B_r) over block
9	Integral of B_y (or B_z) over block
10	Block volume
11	x (or r) part of steady-state Lorentz force
12	y (or z) part of steady-state Lorentz force
13	x (or r) part of 2× Lorentz force
14	y (or z) part of 2× Lorentz force
15	Steady-state Lorentz torque
16	2× component of Lorentz torque
17	Magnetic field coenergy
18	x (or r) part of steady-state weighted stress tensor force
19	y (or z) part of steady-state weighted stress tensor force
20	x (or r) part of 2× weighted stress tensor force
21	y (or z) part of 2× weighted stress tensor force
22	Steady-state weighted stress tensor torque
23	2× component of weighted stress tensor torque
24	R^2 (*i.e.* moment of inertia / density)

Wynik w punkcie

- mo_getpointvalues(X,Y)

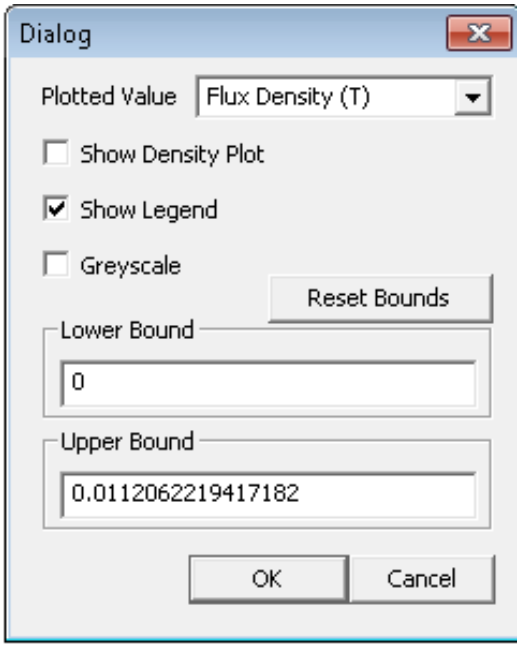
Symbol	Definition
A	vector potential A or flux ϕ
B1	flux density B_x if planar, B_r if axisymmetric
B2	flux density B_y if planar, B_z if axisymmetric
Sig	electrical conductivity σ
E	stored energy density
H1	field intensity H_x if planar, H_r if axisymmetric
H2	field intensity H_y if planar, H_z if axisymmetric
Je	eddy current density
Js	source current density
Mu1	relative permeability μ_x if planar, μ_r if axisymmetric
Mu2	relative permeability μ_y if planar, μ_z if axisymmetric
Pe	Power density dissipated through ohmic losses
Ph	Power density dissipated by hysteresis

Przedstawienie wyników

- mo_showmesh()
- mo_hidemesh()
- mo_showpoints()
- mo_hidepoints()
- mo_showgrid()
- mo_hidegrid()
- mo_smooth(„on” lub „off”)

Rozkład indukcji

- mo_showdensityplot(legend,gscale,upper_B,lower_B,type)
  - legend (0 lub 1)
  - gscale (0 lub 1)
  - type ("bmag", "breal", "bimag„, "hmag", "hreal", "himag„, "jmag", "jreal", "jimag„)



Dziękuję za uwagę

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