Gnuplot OX server

OpenXM.org

1 GNUPLOT

GNUPLOT ox `ox_sm1_gnuplot` . `gnuplot.rr` . `gnuplot.rr` `$(OpenXM_HOME)/lib/asir-contrib/` .

```
[255] gnuplot.start();
0
[257] gnuplot.gnuplot("plot sin(x**2);");
0
```

`gnuplot.heat(`*dt*`,`*step*`)` GNUPLOT .

$$\frac{\partial u}{\partial t} = \frac{\partial^2 u}{\partial x^2}, \quad u(t,0) = u(t,1) = 1$$

$$u(0,x) = x, \ (0 \le x \le 0.5), \quad u(1,x) = 1 - x, \ (0.5 \le x \le 1)$$

$0 \le t \le dt * step$. $[0,1]$ `Heat_N` . static `Heat_N` `gnuplot.set_heat_N` . Courant-Friedrichs-Levi dt*`Heat_N`*`Heat_N` 0.5 , . CFL , .

```
gnuplot.set_heat_N(20); gnuplot.heat(0.001,30);   (CFL number is 0.4)
gnuplot.set_heat_N(20); gnuplot.heat(0.003,30);   (CFL > 0.5 unstable)
```

Author of GNUPLOT: Thomas Williams, Colin Kelley. `http://www.gnuplot.info`

1.1

1.1.1 gnuplot.start

`gnuplot.start()`
:: Localhost `ox_sm1_gnuplot` .

return

- Localhost `ox_sm1_gnuplot` . `ox_sm1_gnuplot` .
- `Xm_noX` =1 , `ox_sm1_gnuplot` debug window .
- , `Gnuplot_proc` .

```
P = gnuplot.start();
```

`ox_launch`, `gnuplot`

1.1.2 gnuplot

`gnuplot.gnuplot(`*s*`|proc=`*p*`)`
:: GNUPLOT *s* .

return

p

s

- GNUPLOT *s* . GNUPLOT , `ox_sm1_gnuplot` GNUPLOT .

- GNUPLOT .
- GNUPLOT ˆ . , ** .

```
[232] P = gnuplot.start();
0
*Plot 3 dimensional graph.
[233] gnuplot.gnuplot("splot x**2-y**2;"|proc=P);
0
*Plot 2 dimensional graph.
[234] gnuplot.gnuplot("plot [-pi:pi] [-2:2] cos(x);");
0
*Output a graph as a postscript figure.
[235] gnuplot.output(|file="hoge.eps");
0
[236] gnuplot.gnuplot("plot sin(x)*cos(x);");
0
[237] gnuplot.gnuplot(|file="x11");
0

*Plot 3 dimensional graph hiding unvisible lines.
[236] gnuplot.gnuplot("set hidden3d");
0
[237] gnuplot.gnuplot("splot (x**2+y**2)*sin(x**2+y**2)");
0
[238] gnuplot.gnuplot("set isosamples 50");
0
[239] gnuplot.gnuplot("splot (x**2+y**2)*sin(x**2+y**2)");
```

ox_launch, gnuplot.start, rtostr, gnuplot.plot_dots

, ; GNUPLOT, , ISBN4-924998-11-7

1.1.3 gnuplot.plot_dots

gnuplot.plot_dots(*d*,*s*|proc=*p*)
          :: *d* *s* .

return

p

d

s   0

- *d* *s* . *s* : "style color point". style lines, points, linespoints, impulses, dots, steps, errorbars, boxes, boxerrorbars . color 1 (red), 2 (green), 3 (blue), 4, ... , 8 . point 1 8 . color, point .
- *d* == [ ] .

```
[239] P = gnuplot.start();
0
```

```
[240] gnuplot.plot_dots([ ],0);
0
[241] for (I=0; I<10; I++) gnuplot.plot_dots([[I,I^2]]," lines ");
[242] A = [ ];
[]
[243] for (I=0; I<10; I++) A = append(A,[ [I,I^2]]);
[244] A;
[[0,0],[1,1],[2,4],[3,9],[4,16],[5,25],[6,36],[7,49],[8,64],[9,81]]
[245] gnuplot.plot_dots(A," lines ");
0
```

gnuplot.start, plot "fileName" with options(GNUPLOT command), gnuplot.clean, gnuplot

1.1.4 gnuplot.heat

gnuplot.heat(*dt*,*step*)

:: .

return

dt

step

- du/dt = d^2 u/dx^2, u(t,0) = u(t,1) = 0 u(0,x) = x (0 <= x <= 0.5), u(0,x) = 1-x (0.5 <= x <= 1.0) .
- Heat_N .
- pde_heat_demo .

```
  [232] gnuplot.set_heat_N(20)$
  [233] gnuplot.heat(0.001,30)$
```

1.1.5 gnuplot.output

gnuplot.output(|*file=s*)

:: GNUPLOT *s* .

return   Void

s   String

- GNUPLOT *s* .
- s "x11" , , , X11 display graphics .

```
  [273] gnuplot.output(|file="hoge.eps");
  Graphic output of GNUPLOT will be written to hoge.eps as a Poscript file.
  0
  [274] gnuplot.gnuplot("plot tan(x)+sin(x);");
  0
  [275] gnuplot.output();
  Usage of gnuplot.output: gnuplot.output(|file="string")
                           gnuplot.output(|file="x11")
  Output device is set to X11
```

gnuplot

1.1.6 `gnuplot.plot_function`

`gnuplot.plot_function(f|proc=p)`
:: gnuplot f .

p

f

- gnuplot f .

  ```
  [290] gnuplot.plot_function((x+sin(x))^2);
  0
  [291] gnuplot.plot_function([x,x^2,x^3]);
  0
  ```

  `gnuplot.to_gnuplot_format`

1.1.7 `gnuplot.stop`

`gnuplot.stop()`
:: GNUPLOT , fifo .

return   Void

s   String

- GNUPLOT , fifo .
- fifo gnuplot .

  ```
  [273] gnuplot.stop()
  ```

  `gnuplot.start`

1.1.8 `gnuplot.setenv`

`gnuplot.setenv(key,value)`
::

return   Void

key   String

value   Object

- key "gnuplot.callingMethod" "plot.gnuplotexec".

  ```
  Use the old method to communicate with gnuplot (version 3).
  This method does not use mkfifo, but we need a patched version of gnuplot.
  [273] gnuplot.setenv("gnuplot.callingMethod",0);
  [274] gnuplot.setenv("plot.gnuplotexec",getenv("OpenXM_HOME")+"/bin/gnuplot4ox");

  Calling your own gnuplot binary.
  [274] gnuplot.setenv("plot.gnuplotexec","/cygdrive/c/program files/gnuplot/pgnuplot.ex
  ```

  `gnuplot.start`

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