

Gnuplot OX server

Edition : auto generated by oxgentexi on 19 February 2020

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 .
```

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

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

$0 \leq t \leq dt * step$. [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 ^ . , ** .

```

[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

- $du/dt = d^2 u/dx^2$, $u(t,0) = u(t,1) = 0$ $u(0,x) = x$ ($0 \leq x \leq 0.5$), $u(0,x) = 1-x$ ($0.5 \leq x \leq 1.0$) .
- 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 Postscript 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.exe")
gnuplot.start
```

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(Index is nonexistent)

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