

Poisson astral

This version: May 25, 2002 (incomplete and unfinished)

Solution de $\nabla^2\Phi = F(\Phi, h)$ par corrections $\Phi \rightarrow \Phi + \psi$, avec $\nabla^2\psi - A\psi = F - \nabla^2\Phi$, où $A = \partial F/\partial\Phi$. Ici, $A > 0$ (sauf peut-être dans la couche singulière).

Script V1.1 session started Sat May 25 08:50:57 2002

C:\dos\djgpp>poissona

...

poissona.d2

```
contents of poissona.d2          Phi1= 25.
      hb          Z  mass(p)  dens.(m -3) temp.(K)  c psi xi ze
1 1.4000E+06 ec   -1 5.4466E-04 2.6879E+10 3.5000E+03  1  1  1  0
2 1.4000E+06 O+    1 1.6000E+01 2.6000E+10 1.5000E+03  0  1  1  1
3 1.4000E+06 H+    1 1.0000E+00 8.8000E+08 3.0000E+03  1  1  1  0
4 1.4000E+06 ew   -1 5.4466E-04 6.0000E+06 1.0000E+06  1  0  0  1
5 1.4000E+06 p    1 1.0000E+00 4.8000E+06 7.0000E+06  1  0  0  1
test sum Zi ni = 0.
```

...

Poisson: h0,hN,Npo? (stop si <=0)

2.3965e7 2.3975e7 40

h0= 23965000. hN= 23975000. Phi0= 21.0953685 PhiN= 11.0287867

test Laplace: 1.23376877E-11

how many further iterations? 0=stop

```
1 Laplace: 1.31071289E-07 err: 6.99542725E-05
2 Laplace: 1.26587165E-05 err: 2.07309358E-06
3 Laplace: 1.28888323E-05 err: 8.38427013E-07
4 Laplace: 1.29750861E-05 err: 3.75636631E-07
5 Laplace: 1.30126764E-05 err: 1.73942752E-07

10 Laplace: 1.30443104E-05 err: 3.09286179E-08
20 Laplace: 1.30450917E-05 err: 9.64021307E-09
30 Laplace: 1.30450944E-05 err: 3.0194216E-09
40 Laplace: 1.30450935E-05 err: 9.45639234E-10
50 Laplace: 1.30450962E-05 err: 2.96034919E-10
```

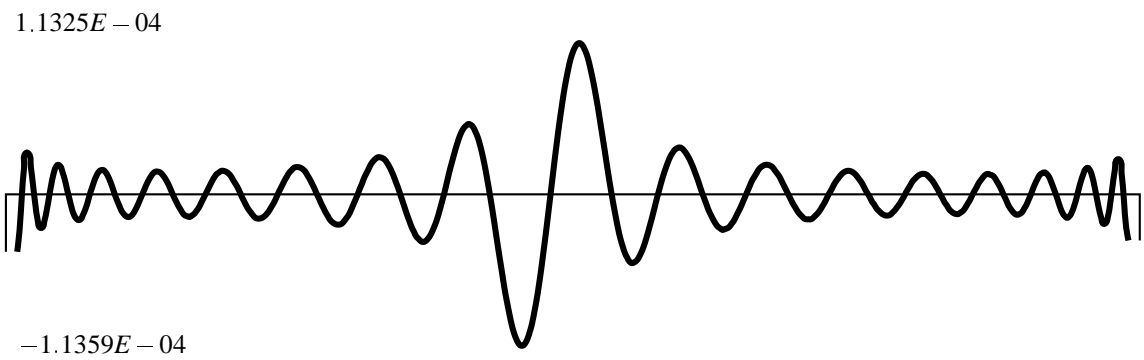
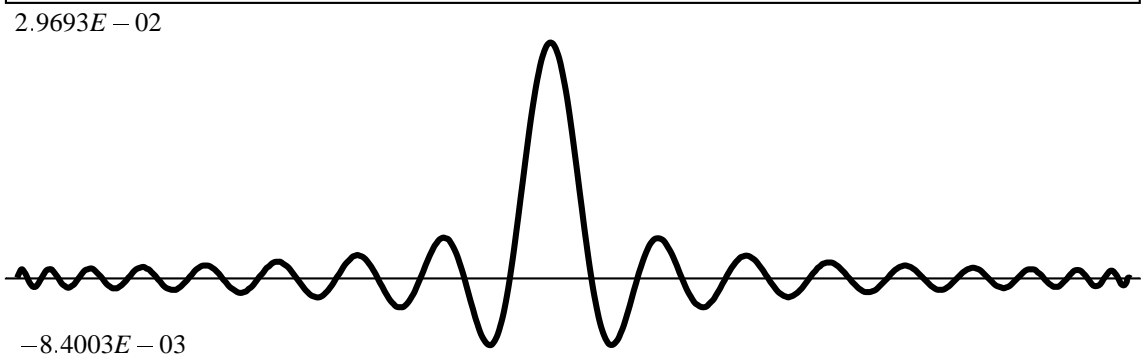
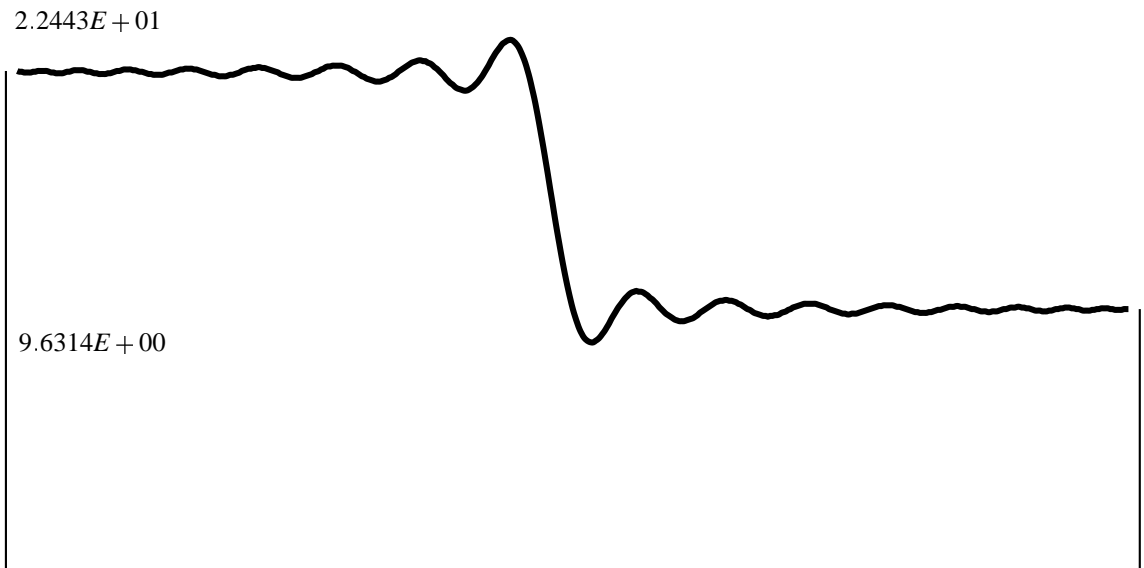
points du graphe? entre 10 et 500

500

min Phi = 9.6313982 max= 22.4429722

min -dPhi/dh = -0.00840033591 max= 0.0296929739

min Laplacien Phi = -0.000113588489 max= 0.000113254609



```
C:\dos\djgpp>exit
Script completed Sat May 25 08:54:02 2002
```

```
Script V1.1 session started Sat May 25 09:06:16 2002
```

```
C:\dos\djgpp>poissona
...
poissona.d2
```

```

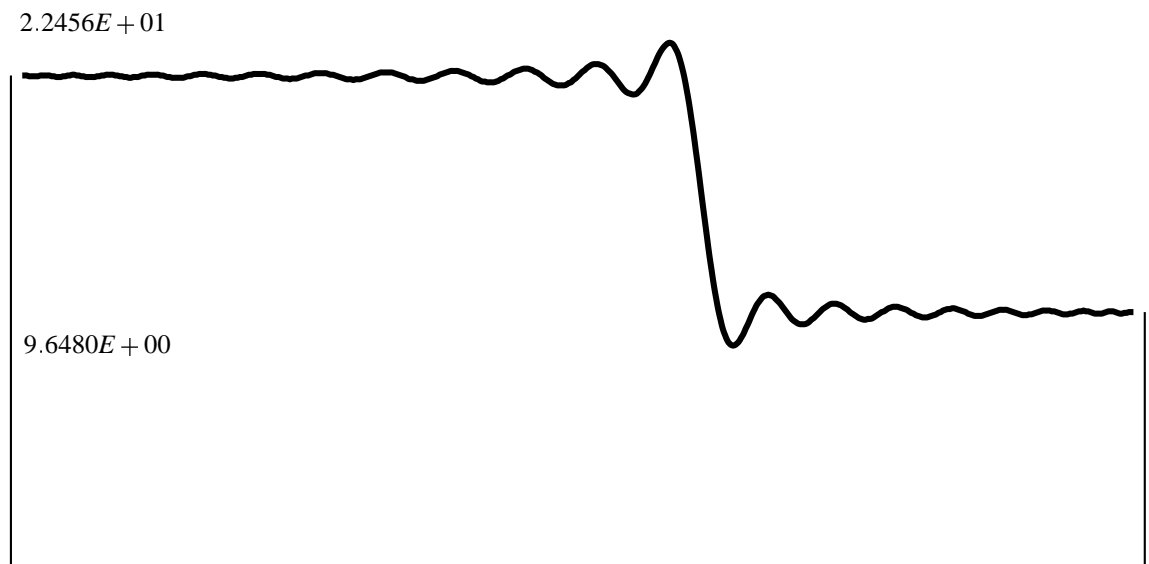
...
Poisson: h0,hN,Npo? (stop si <=0)
2.3969e7 2.397e7 50
h0= 23969000. hN= 23970000. Phi0= 21.0567339 PhiN= 11.0386806

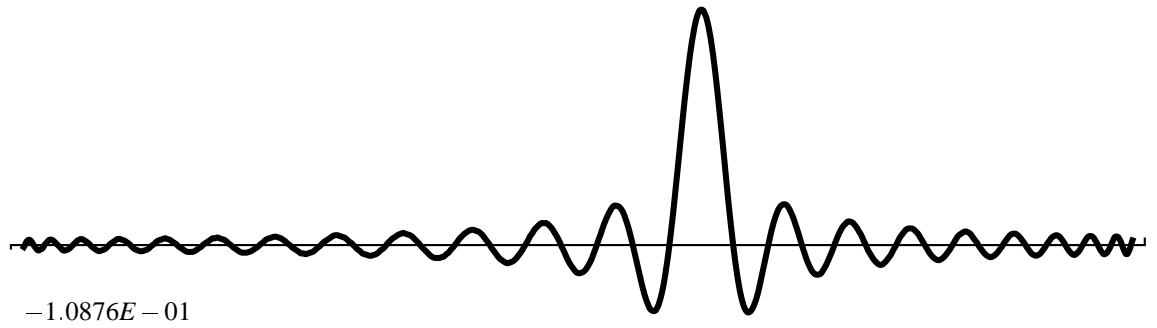
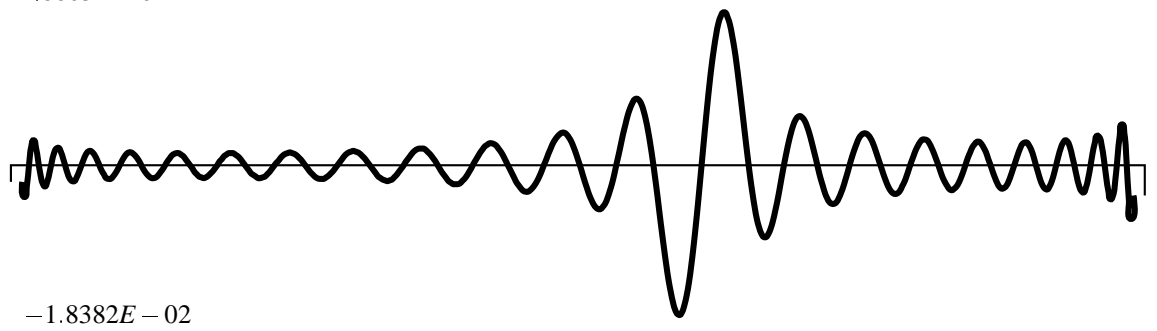
test Laplace: 3.21513741E-11
how many further iterations? 0=stop
1 Laplace: 1.16888749E-07 err: 0.0108942203
2 Laplace: 1.02091635E-05 err: 6.11931728E-06
3 Laplace: 1.02094691E-05 err: 5.79277776E-06
4 Laplace: 1.02096765E-05 err: 5.57007843E-06
5 Laplace: 1.02098411E-05 err: 5.39561188E-06

10 Laplace: 1.02104086E-05 err: 4.7902563E-06
100 Laplace: 1.0213007E-05 err: 2.01856733E-06
200 Laplace: 1.0213852E-05 err: 1.11359464E-06
300 Laplace: 1.02142776E-05 err: 6.61675642E-07
400 Laplace: 1.02145186E-05 err: 4.040634E-07
500 Laplace: 1.0214666E-05 err: 2.4975742E-07

points du graphe? entre 10 et 500
500
min Phi = 9.64803505 max= 22.4563293
min -dPhi/dh = -0.108762838 max= 0.379870057
min Laplacien Phi = -0.0183818042 max= 0.0188032649

```



$3.7987E-01$  $1.8803E-02$ 

C:\dos\djgpp>exit
Script completed Sat May 25 09:10:29 2002