Scilab
Graphiques en 2D/3D

```
> deff('val=fc(x,y)','val=exp(-(x^2+y^2))')
// c'est une fonction en forme de cloche

>// maille grossière
x=-1:0.1:1;
y=x';
zc=feval(x,y,fc);


// maille fine voir trop fine pour le dessin
xb=-1:0.01:1;
yb=xb';
zcb=feval(xb,yb,fc);

-->Sgrayplot(x,y,zc)
```

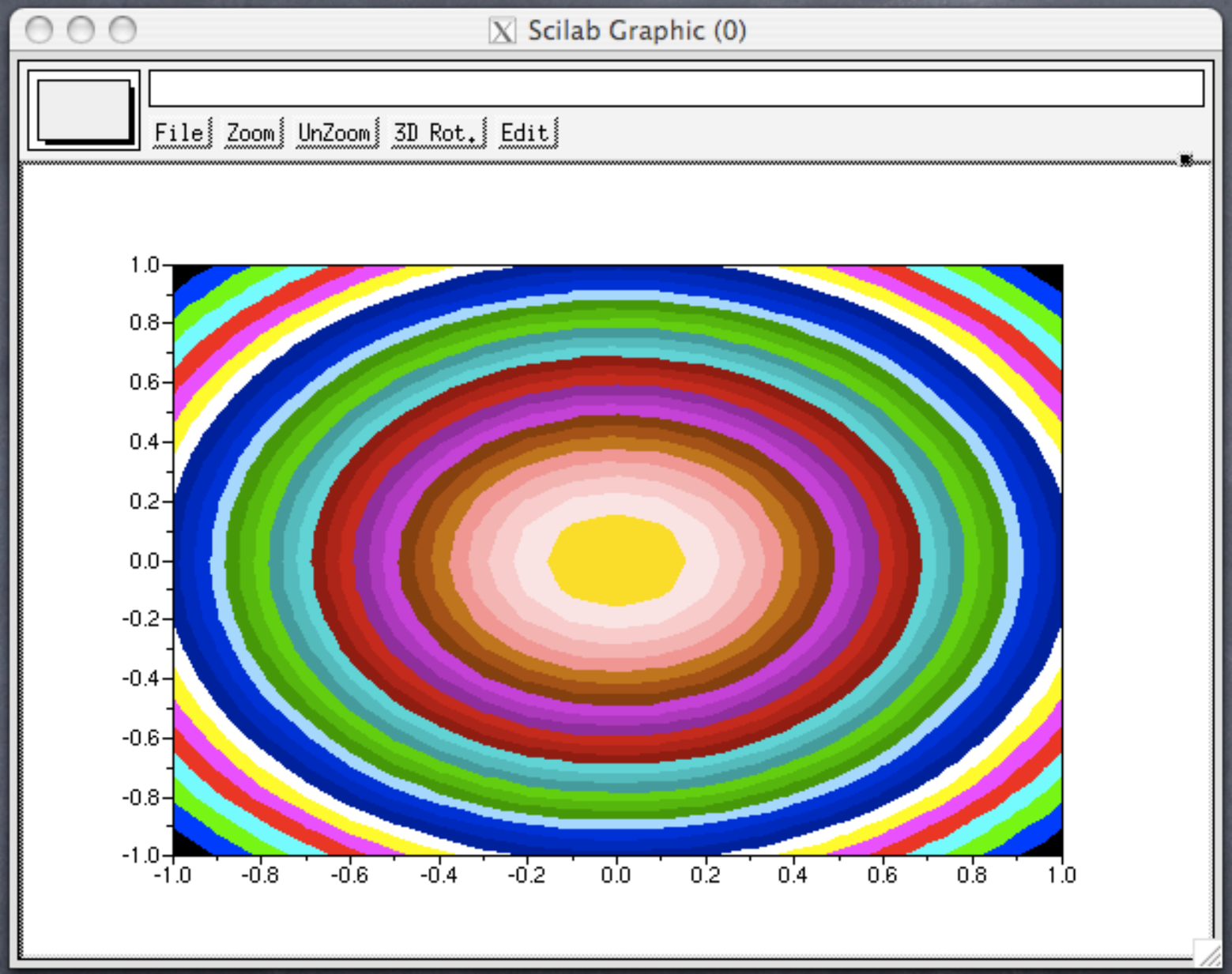
Soit l'exemple:

```
> deff('val=fc(x,y)','val=exp(-(x^2+y^2))')
// c'est une fonction en forme de cloche

>// maille grossière
x=-1:0.1:1;
y=x';
zc=feval(x,y,fc);


// maille fine voir trop fine pour le dessin
xb=-1:0.01:1;
yb=xb';
zcb=feval(xb,yb,fc);

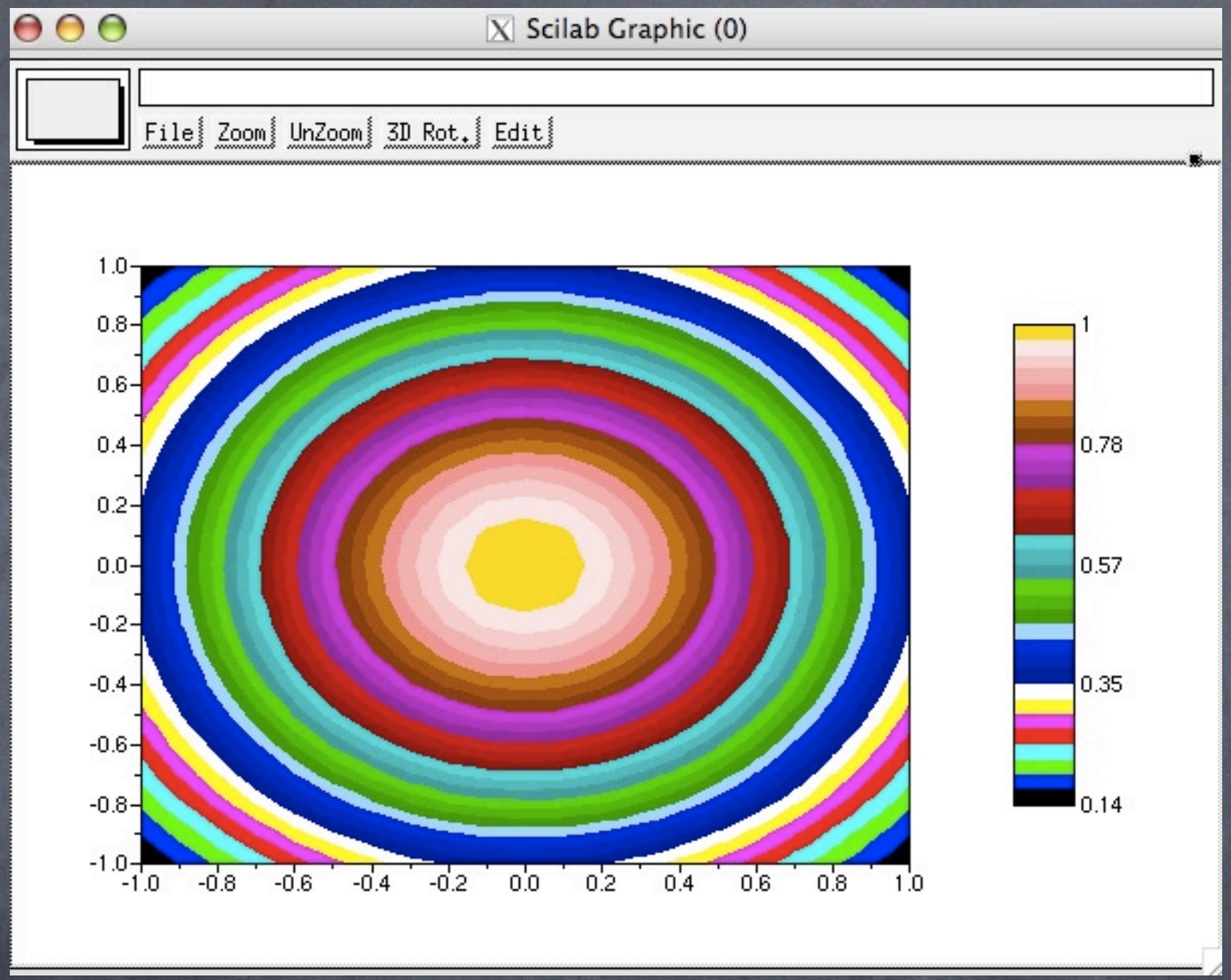
-->Sgrayplot(x,y,zc)
```



Il faut une échelle de couleurs:

--->colorbar(0,1)

En fait il est préférable de tracer l'échelle de couleurs avant



En fait il est préférable de tracer l'échelle de couleurs avant

Avec le gros maillage c'est seulement un peu mieux en tracé plan:

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-->clf

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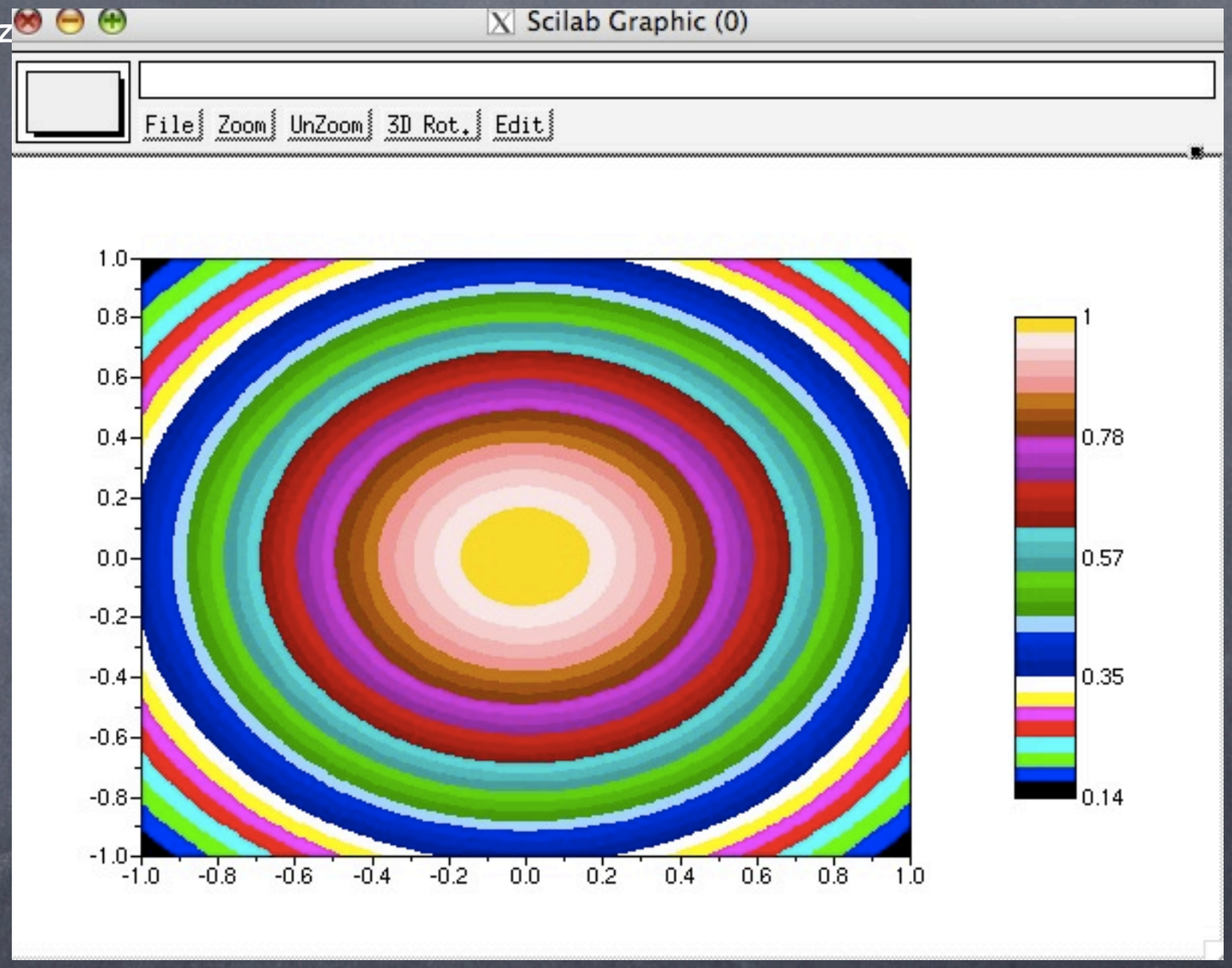
```
-->clf
-->colorbar(min(zcb),max(zcb))
```

Avec le gros maillage c'est seulement un peu mieux en tracé plan:

```
-->clf
-->colorbar(min(zcb),max(zcb))
-->Sgrayplot(xb,yb,zcb)
```

Avec le gros maillage c'est seulement un peu mieux en tracé plan:

```
-->clf
-->colorbar(min(zcb),max(z
-->Sgrayplot(xb,yb,zcb)
```



Avec le gros maillage c'est seulement un peu mieux en tracé plan:

```
-->clf
-->colorbar(min(zcb),max(z
-->Sgrayplot(xb,yb,zcb)
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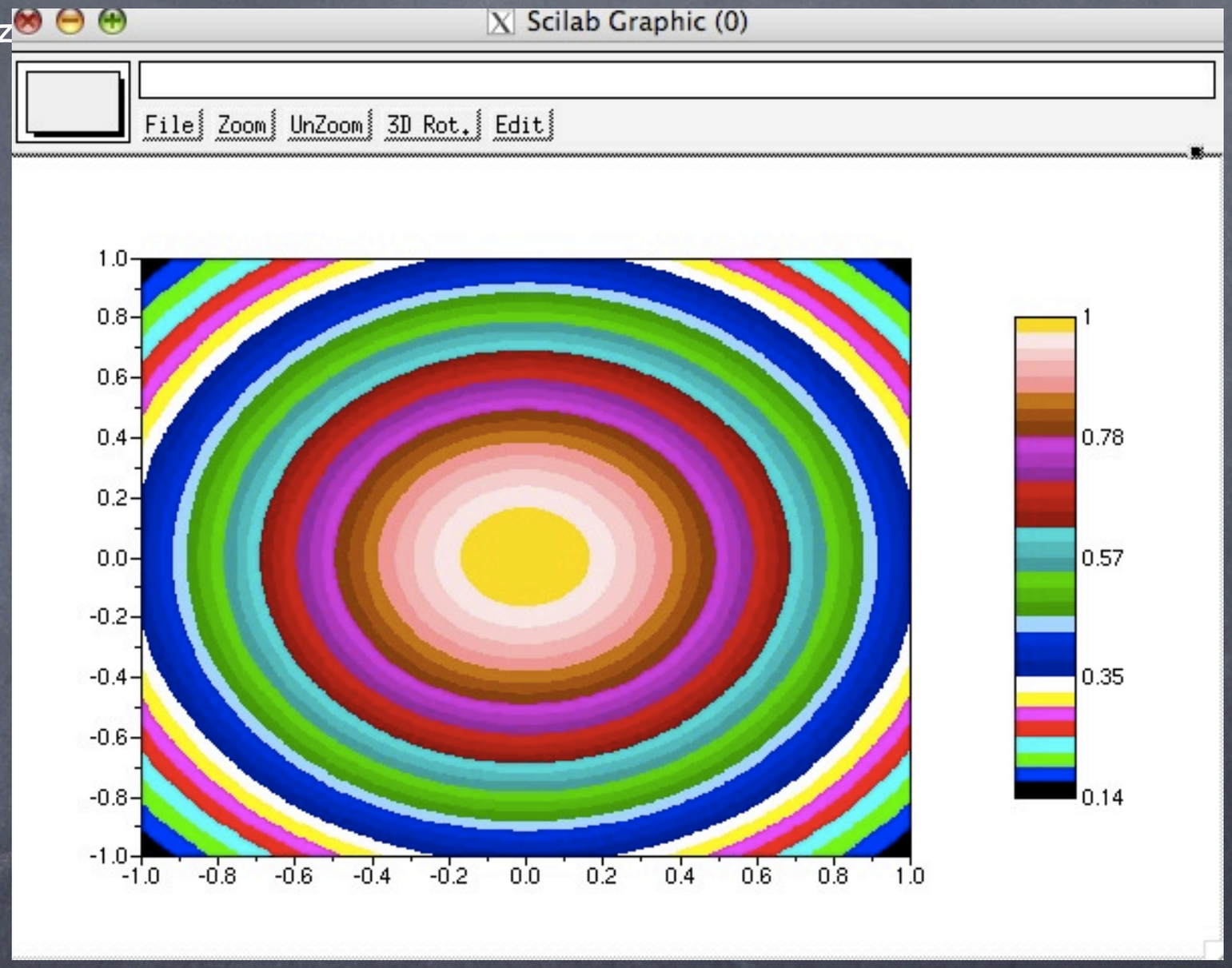
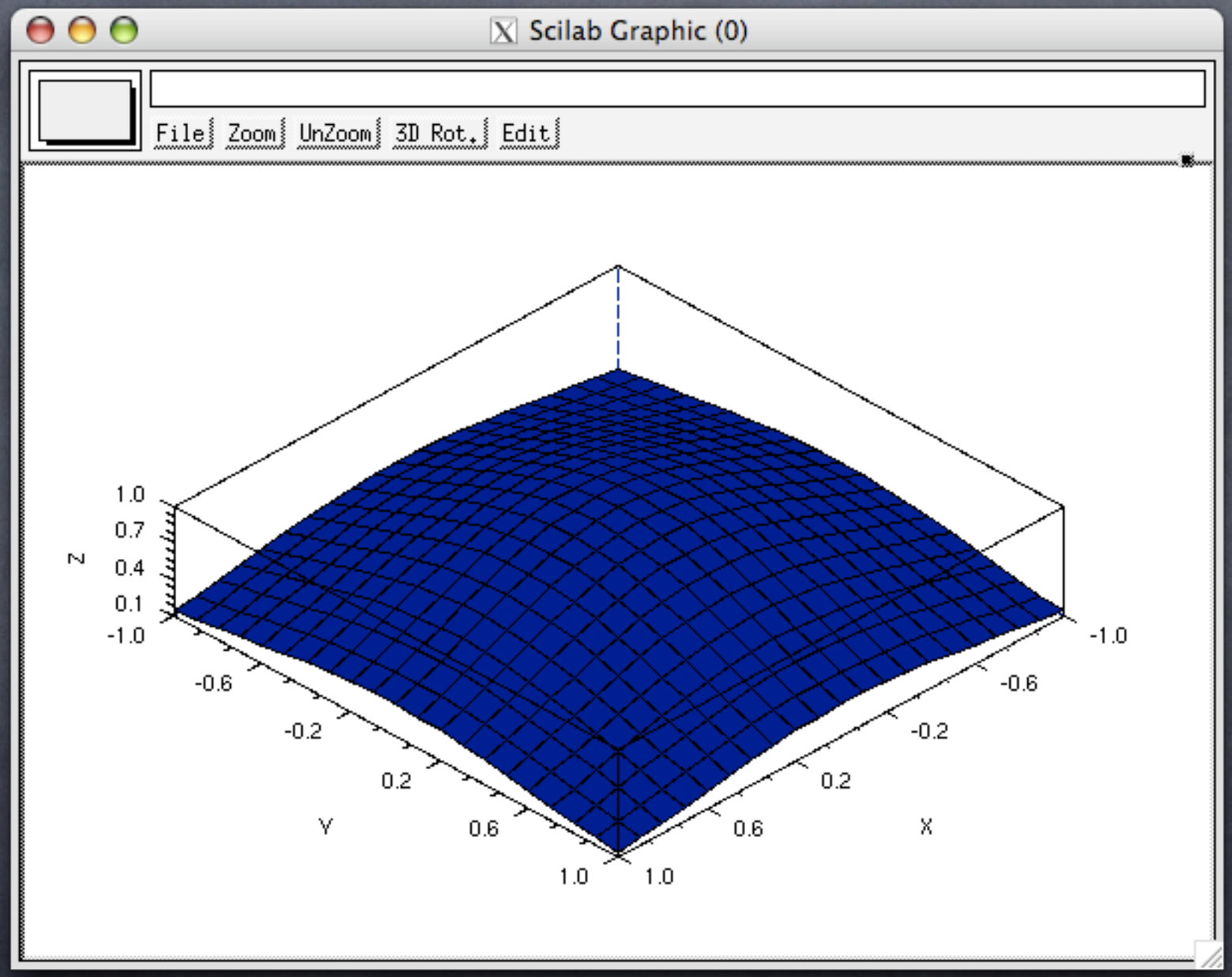
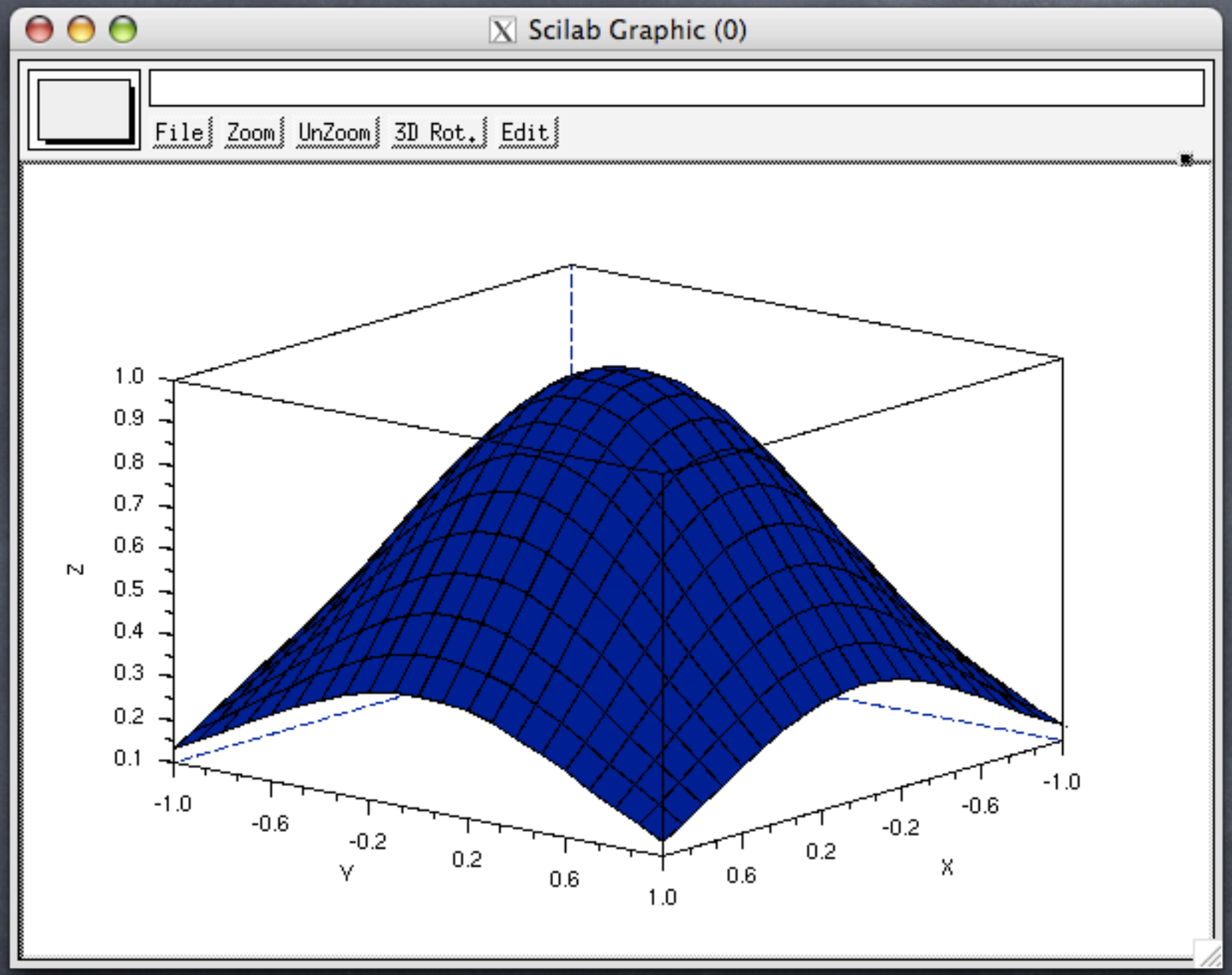


Il n'y a cependant pas assez de couleurs pour avoir un dessin satisfaisant

Représentation tridimensionnelle

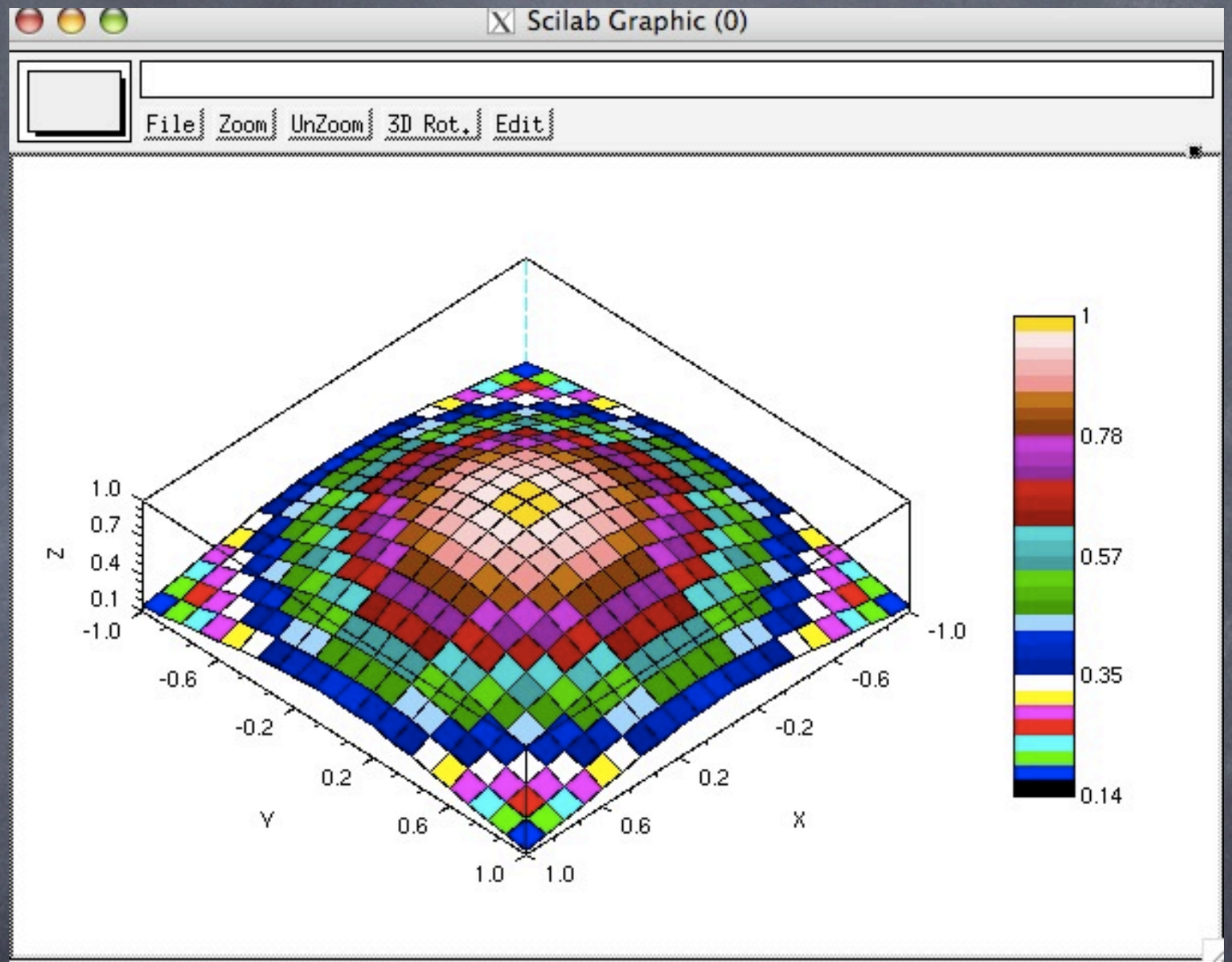
--->plot3d(x,y,zc)


Scilab Graphic (0)
File
Zoom
UnZoom
3D Rot.
Edit
Z
1.0
0.7
0.4
0.1
-1.0
-0.6
-0.2
0.2
0.6
1.0
Y
-1.0
-0.6
-0.2
0.2
0.6
1.0
X



Avec des couleurs ce serait mieux

```
clf;
plot3d1(x,y,zcb);
```


Scilab Graphic (0)
File
Zoom
UnZoom
3D Rot.
Edit
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0.7
0.4
0.1
Z
-1.0
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-0.2
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0.6
1.0
Y
-1.0
-0.6
-0.2
0.2
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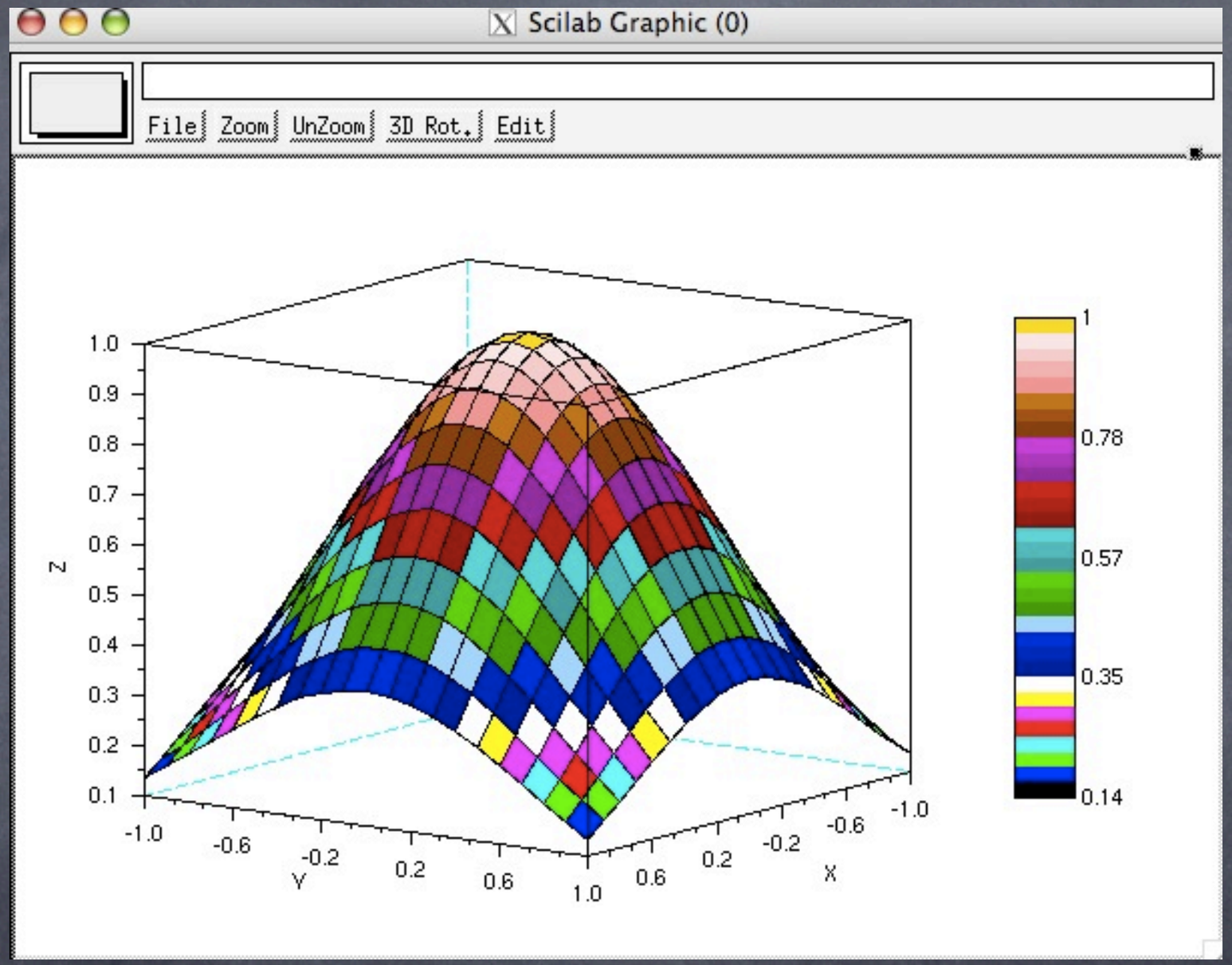
1.0
X
1
0.78
0.57
0.35
0.14


Scilab Graphic (0)
File
Zoom
UnZoom
3D Rot.
Edit
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0.8
0.7
0.6
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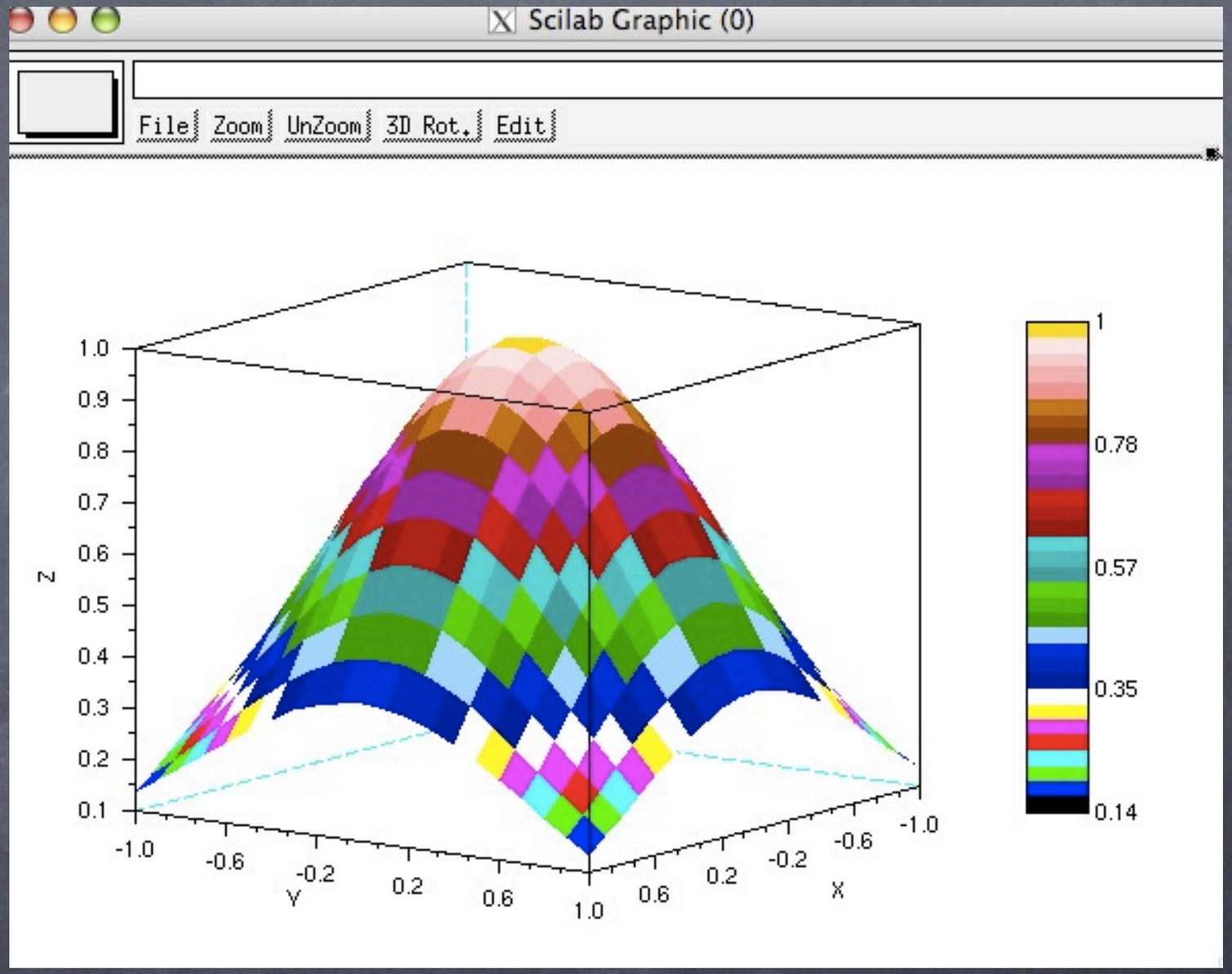
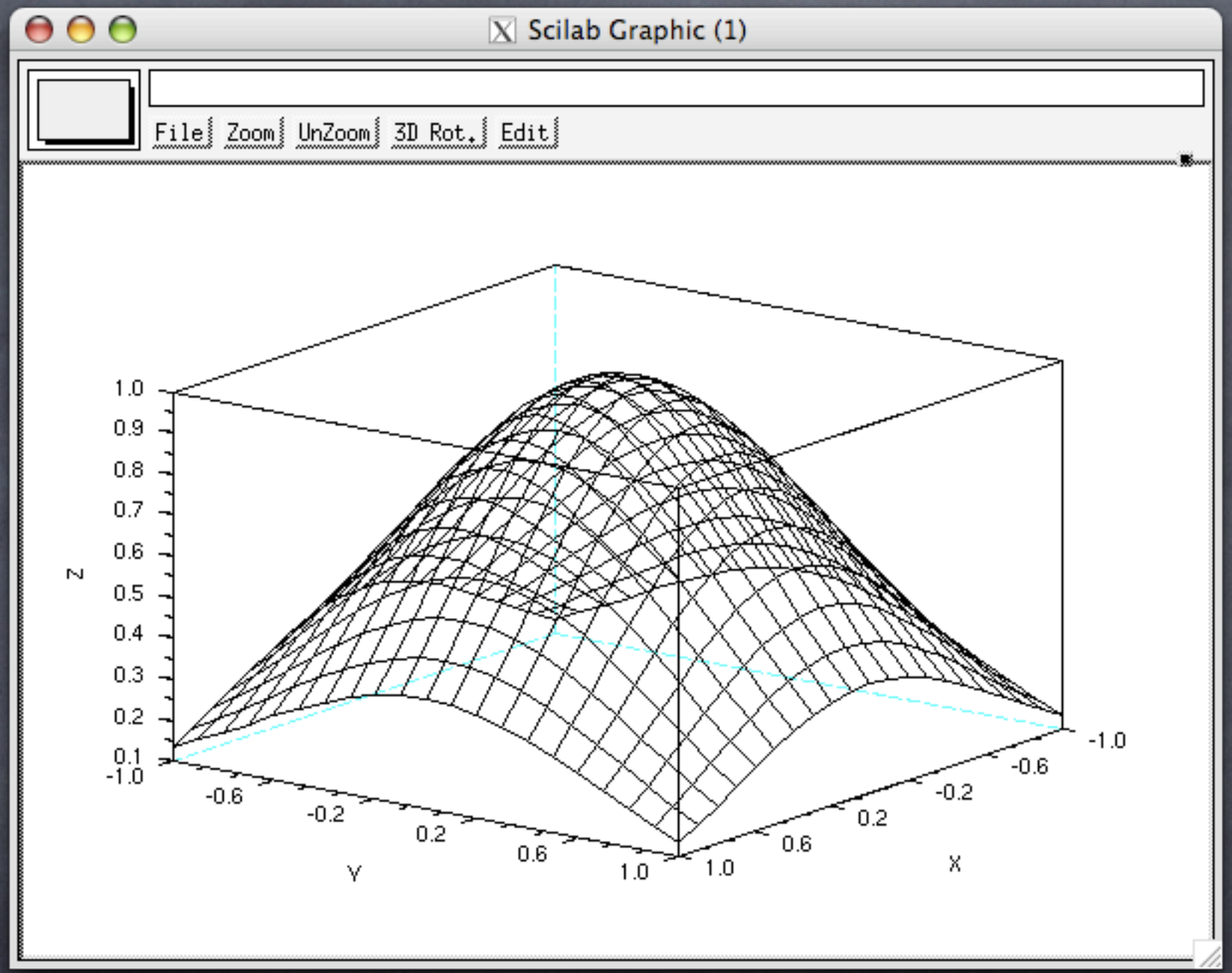
0.4
0.3
0.2
0.1
-1.0
-0.6
-0.2
0.2
0.6
1.0
Y
0.6
0.2
-0.2
-0.6
-1.0
X
1
0.78
0.57
0.35
0.14

-> h=get("hdl") // on recupère le pointeur permettant d'accéder aux propriétés du dessin
-> h.color_mode=-2 // le bord des facettes n'est pas tracé



// c'est mieux mais ce n'est toujours pas fameux

-->xselect()
-->h.color_flag=0;


Scilab Graphic (1)
File
Zoom
UnZoom
3D Rot.
Edit
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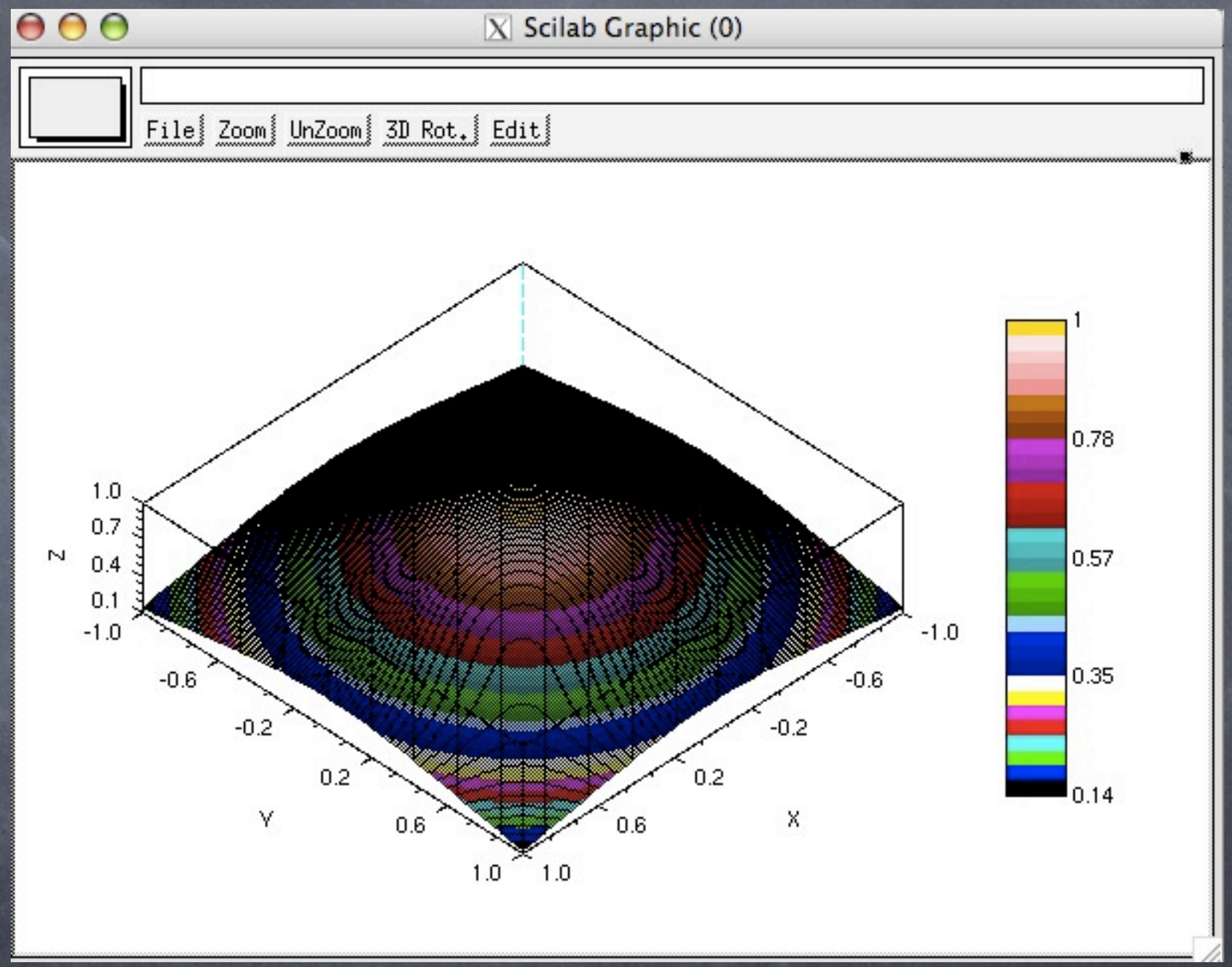
-0.6
-0.2
0.2
0.6
1.0
Y
1.0
0.6
0.2
-0.2
-0.6
-1.0
X

Avec le maillage Fin:

```
-->clf
-->colorbar(min(zcb),max(zcb))
-->plot3d1(xb,yb,zcb)
```


Scilab Graphic (0)
File
Zoom
UnZoom
3D Rot.
Edit
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1.0
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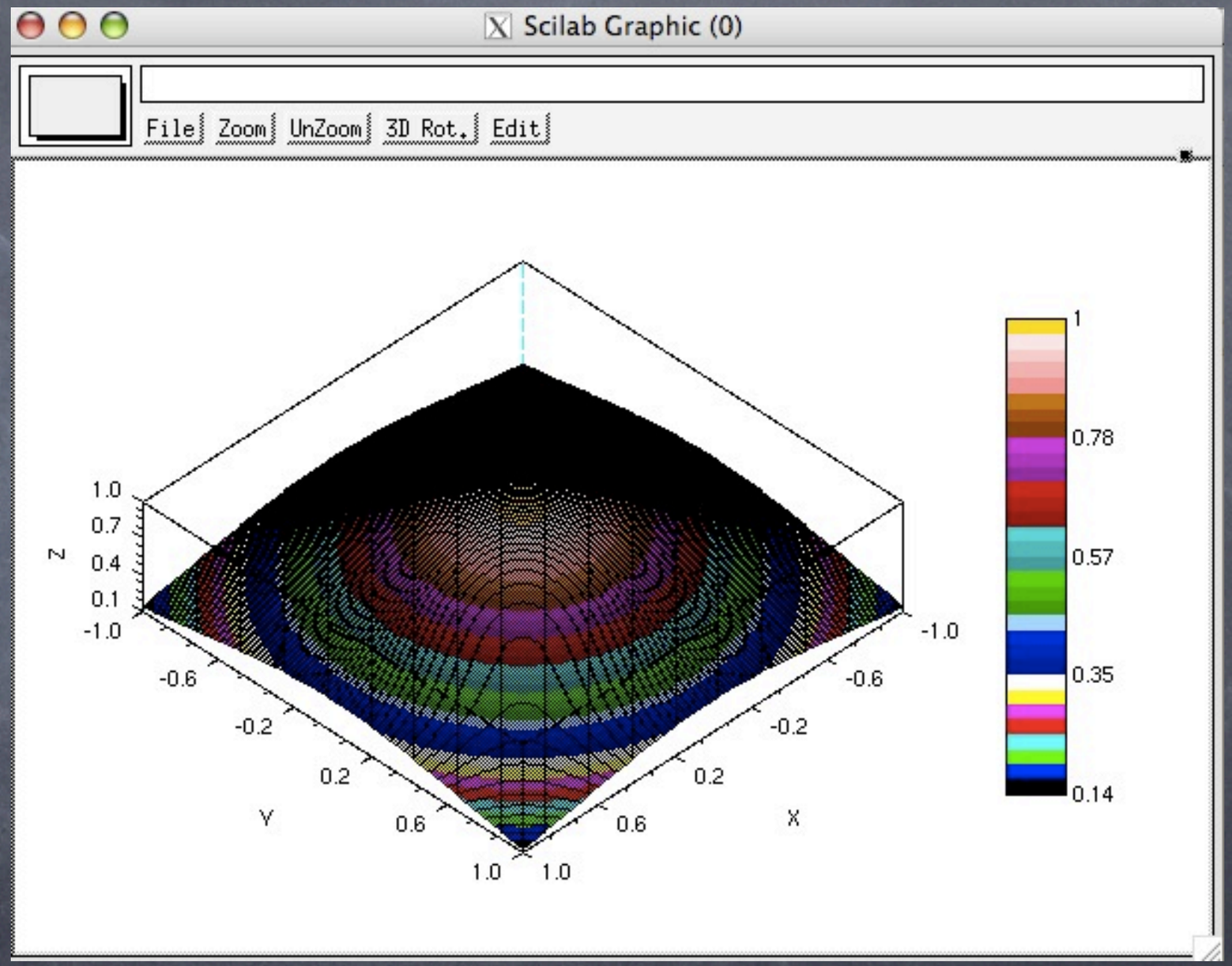
-0.6
-0.2
0.2
0.6
1.0
Y
X
1
0.78
0.57
0.35
0.14

//pas fameux


Scilab Graphic (0)
File
Zoom
UnZoom
3D Rot.
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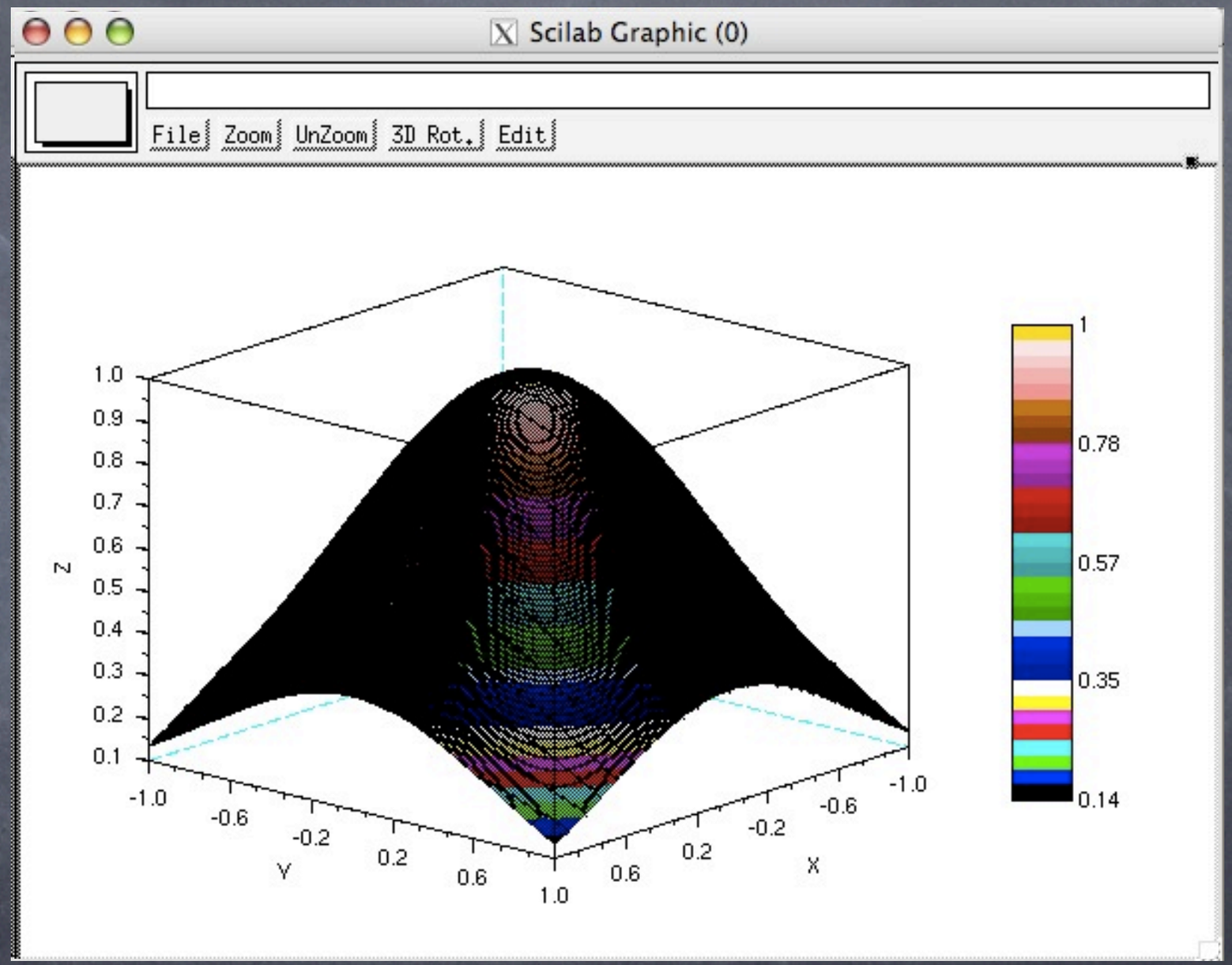
-1.0
-0.6
-0.2
0.2
0.6
1.0
Y
X
1
0.78
0.57
0.35
0.14

//pas fameux


Scilab Graphic (0)
File
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Y
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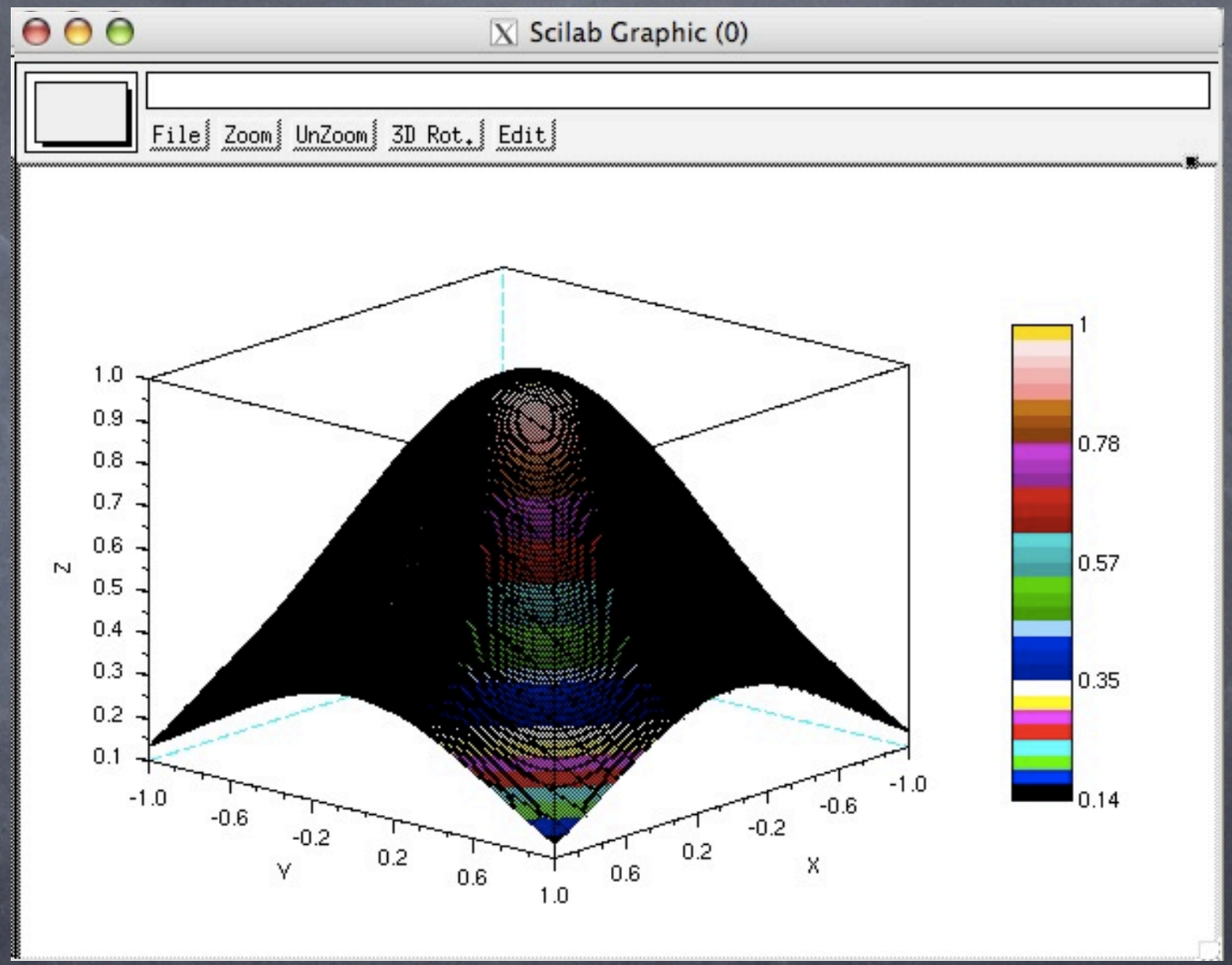
-0.2
0.2
0.6
1.0
X
1.0
0.6
0.2
-0.2
-0.6
-1.0
1
0.78
0.57
0.35
0.14

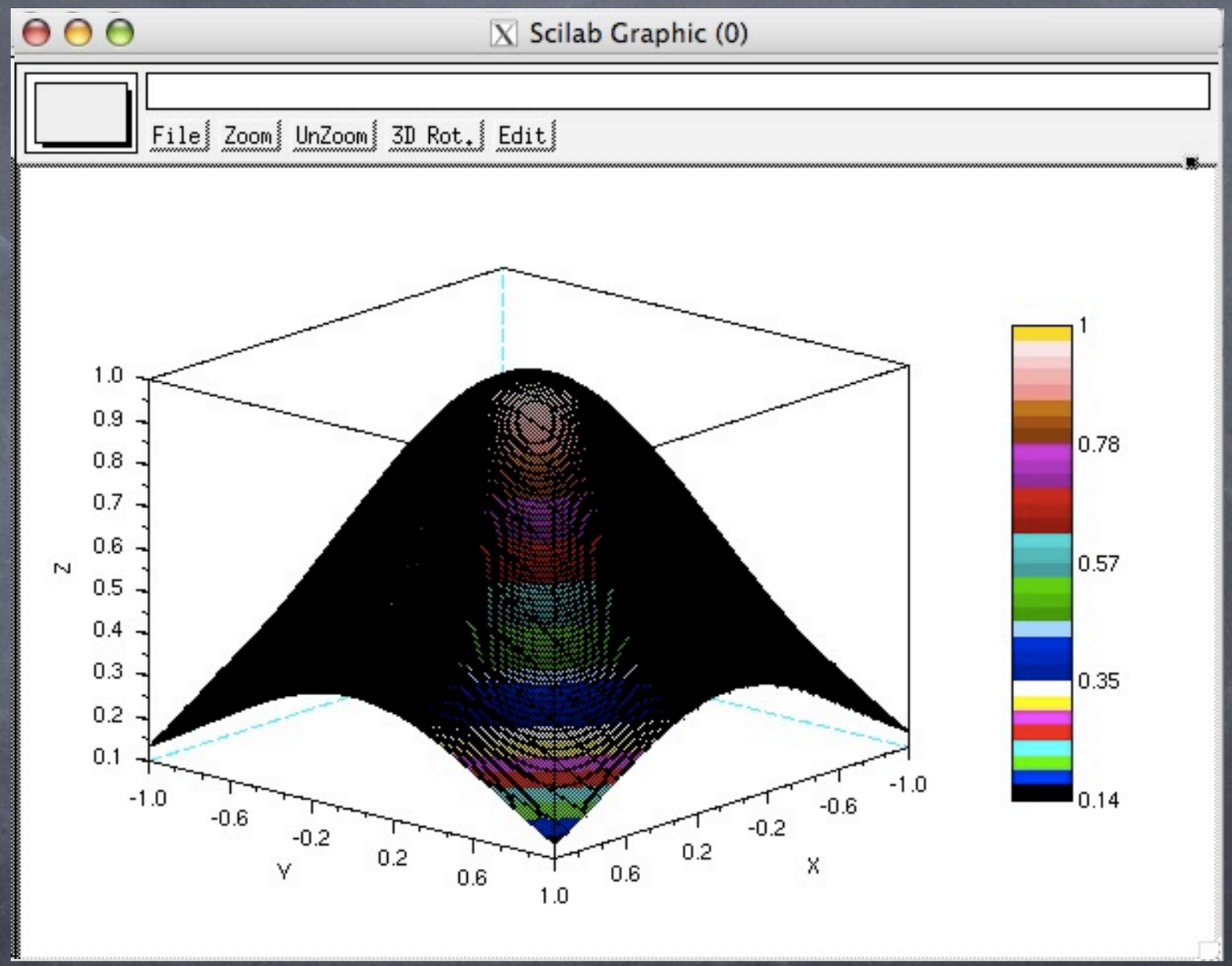
//pas fameux

//vraiment pas fameux



//pas fameux

//vraiment pas fameux



La superposition des mailles gache le dessin.

```
-->h=get("hdl")
 h  =

Handle of type "Plot3d" with
properties:
==================================
======
parent: Axes
children: []
visible = "on"
surface_mode = "on"
foreground = -1
thickness = 1
mark_mode = "off"
mark_style = 0
mark_size_unit = "tabulated"
mark_size = 0
mark_foreground = -1
mark_background = -2
data.x = matrix 1x201
data.y = matrix 201x1
data.z = matrix 201x201
color_mode = 2
color_flag = 1
hiddencolor = 4
user_data = []
```

```
-->h=get("hdl")
 h  =

Handle of type "Plot3d" with
properties:
==================================
======
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visible = "on"
surface_mode = "on"
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```

```
-->h.color_mode=-2
// en passant ce mode en négatif les mailles n'apparaissent plus
```

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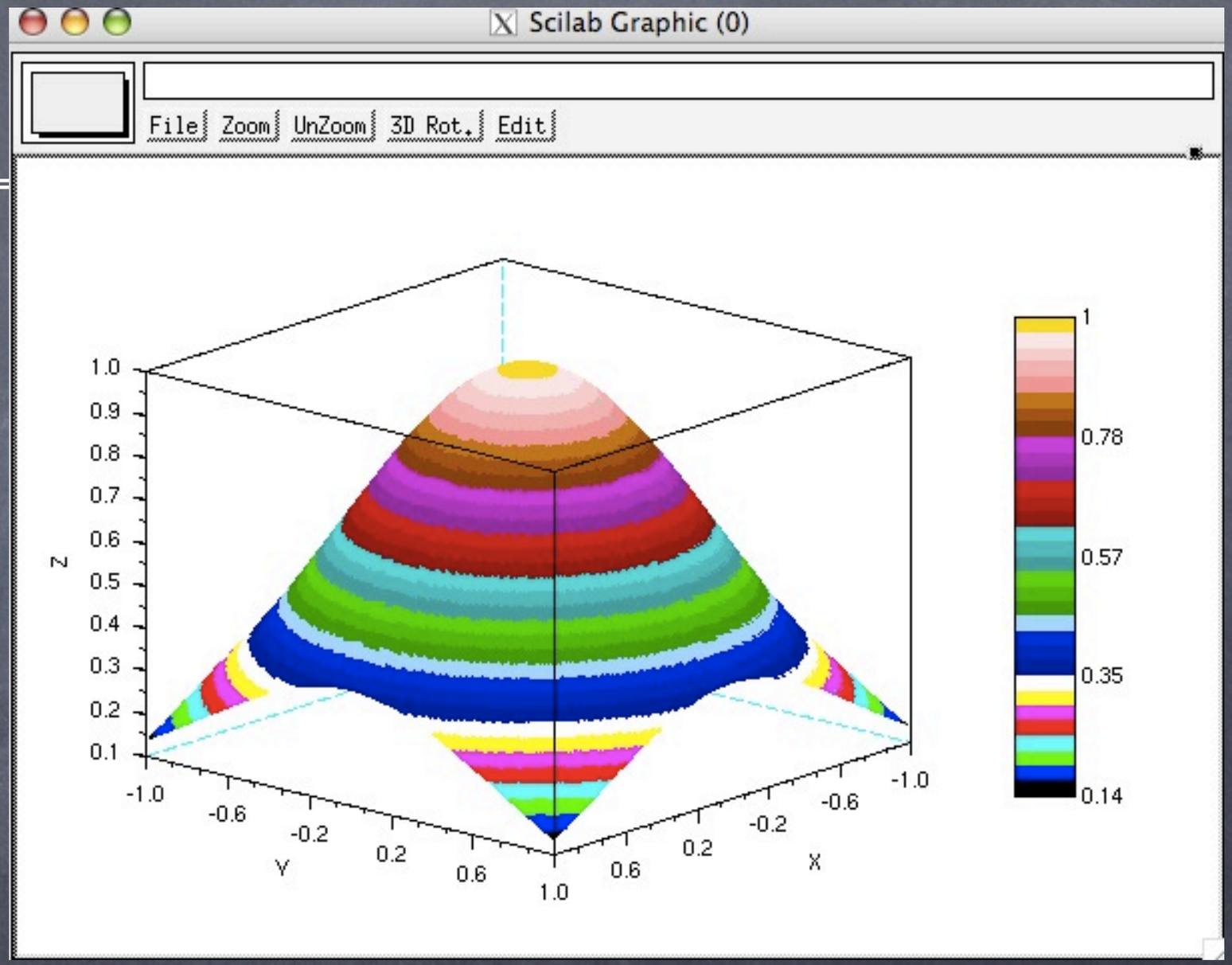

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Handle of type "Plot3d" with
properties:
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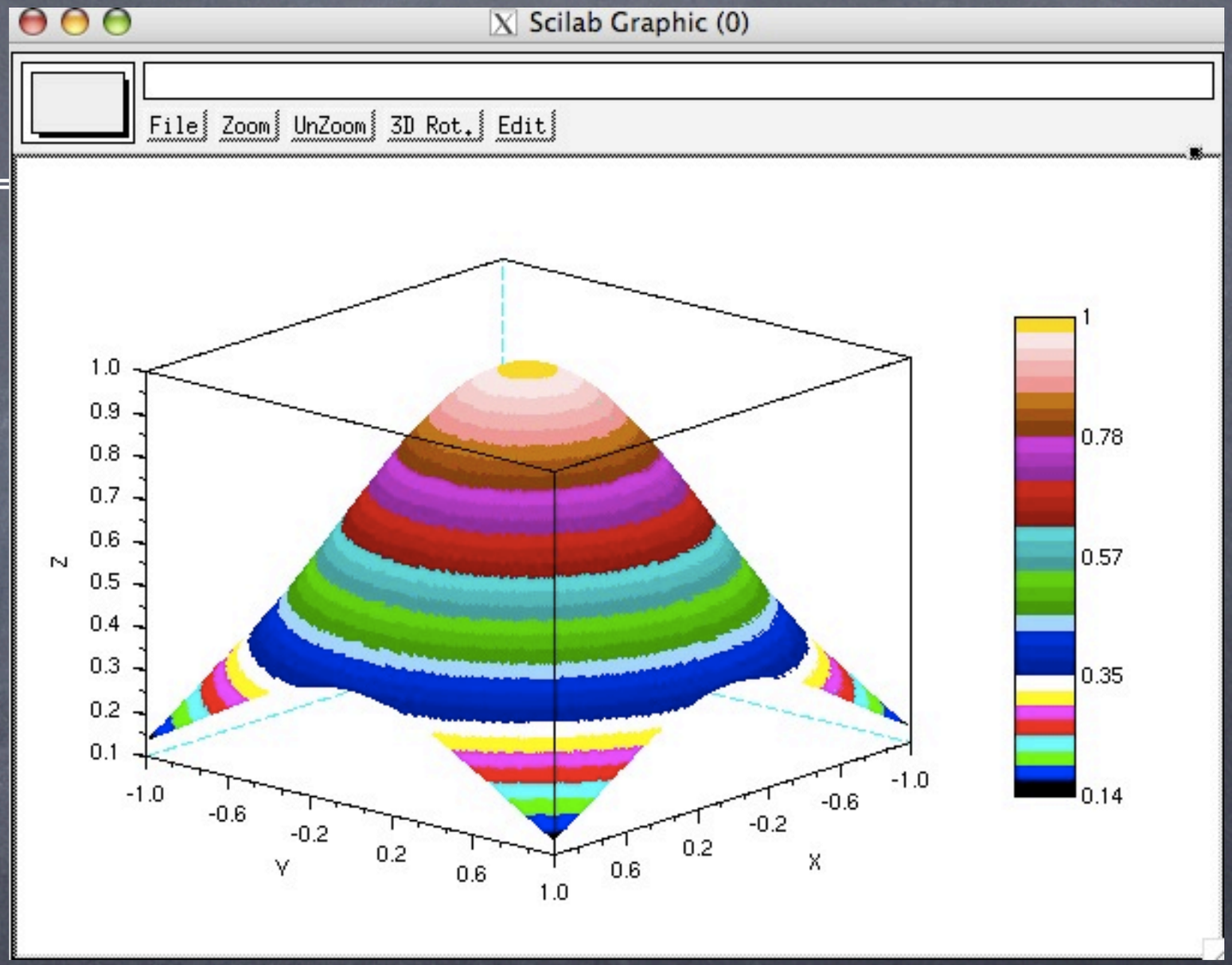

//cela ressemble à un pull bon marché ...

// Changeons l'echelle de couleurs : colormap

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colormap

Scilab Function

Last update : 12/04/2004

colormap - using colormaps

Description

A colormap **cmap** is defined by a m x 3 matrix. m is the number of colors. Color number i is given as a 3-uple **cmap(i,1)**, **cmap(i,2)cmap(i,3)** corresponding respectively to red, green and blue intensity between 0 and 1.

At the beginning, 32 colors are defined in the colormap. You can change the colormap of a figure by using **set(f,"color_map",cmap)** where **f** is the handle of the figure.

Each color in the colormap has an id you have to use to specify color in most plot functions. To see the ids, use function **getcolor**.

The functions **hotcolormap**, **jetcolormap** and **graycolormap** provide colormaps with continuous variation of the colors.

You can get the default colormap by **cmap=get(sdf(),"color_map")**.

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colormap

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hotcolormap

Scilab Function

Last update : 23/03/2004

hotcolormap - red to yellow colormap

Calling Sequence

```
cmap=hotcolormap(n)
```

Parameters

- **n**: integer >= 3, the colormap size.
- **cmap**: matrix with 3 columns **[R,G,B]**.

Description

hotcolormap computes a colormap with **n** hot colors varying from red to yellow.

Examples

```
xset("colormap",hotcolormap(32))
plot3d1()
```

hotcolormap

Scilab Function

Last update : 23/03/2004

hotcolormap - red to yellow colormap

Calling Sequence

```
cmap=hotcolormap(n)
```

Parameters

- **n**: integer >= 3, the colormap size.
- **cmap**: matrix with 3 columns **[R,G,B]**.

Description

hotcolormap computes a colormap with **n** hot colors varying from red to yellow.

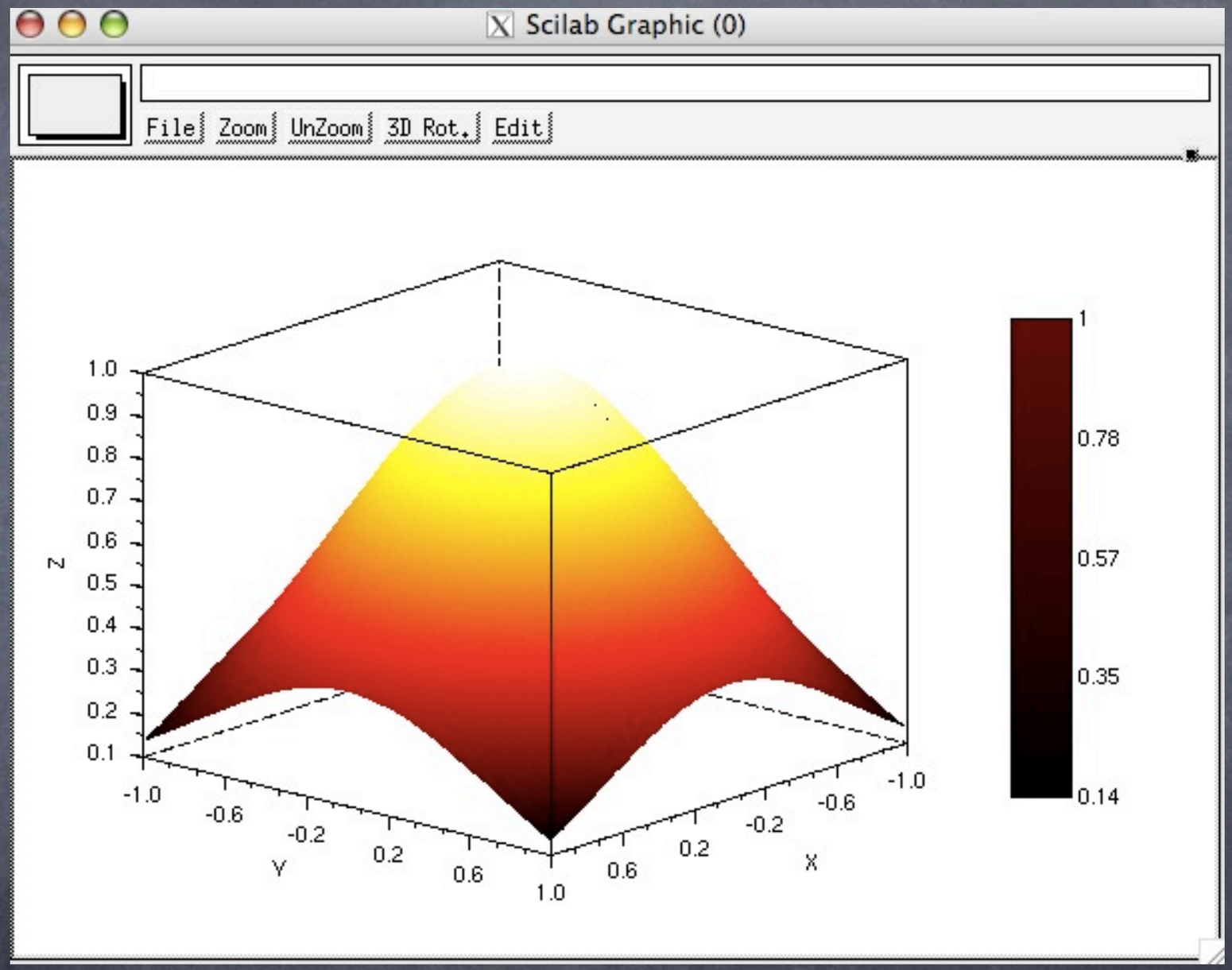
Examples

```
xset("colormap",hotcolormap(32))
plot3d1()
```

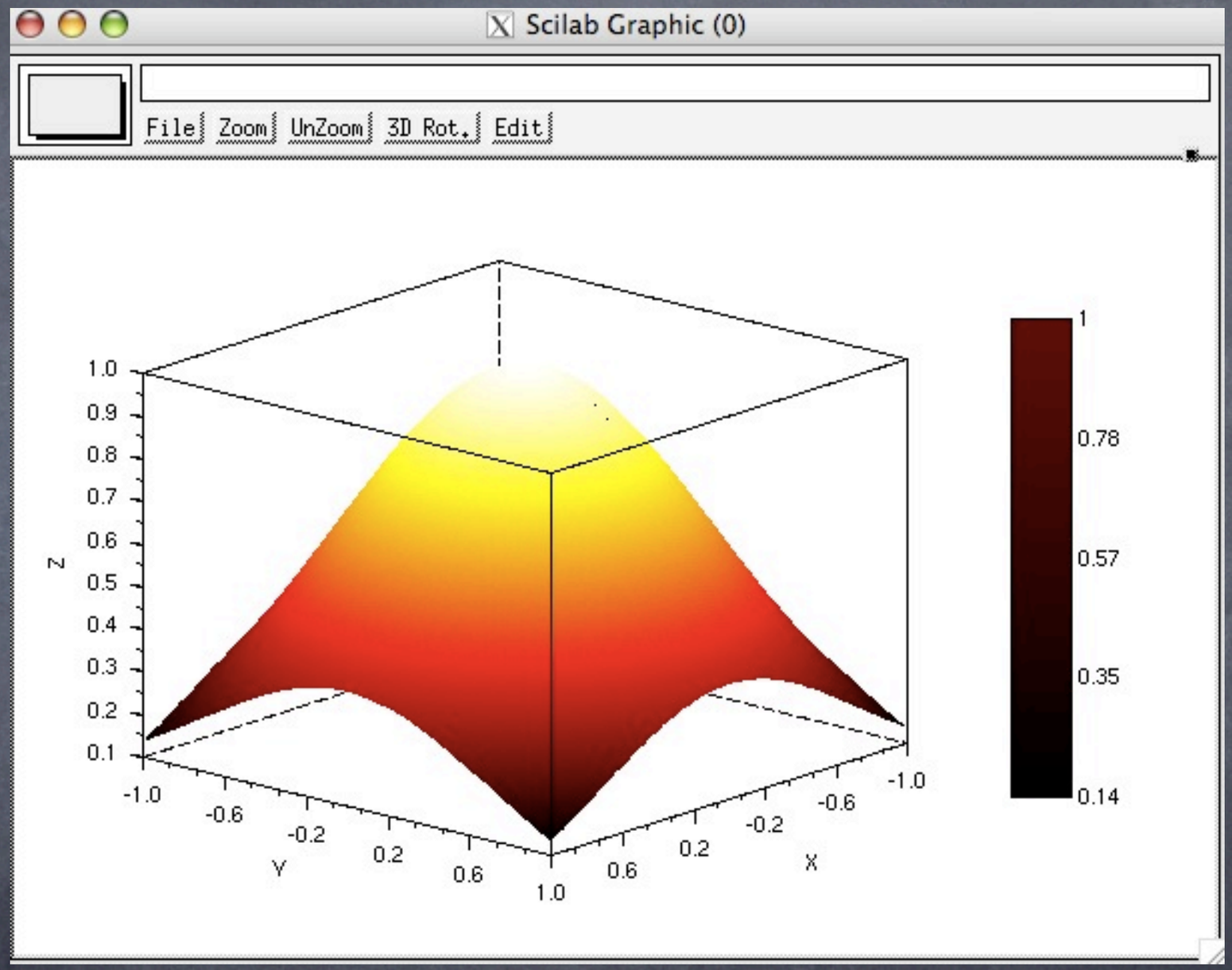
```
-->cmap=hotcolormap(256)
 cmap  =

    0.0104167    0.          0.
    0.0208333    0.          0.
    0.03125      0.          0.
    0.0416667    0.          0.
    0.0520833    0.          0.
    0.0625       0.          0.
    0.0729167    0.          0.
    0.0833333    0.          0.
more ?
```

-> xset("colormap",cmap)

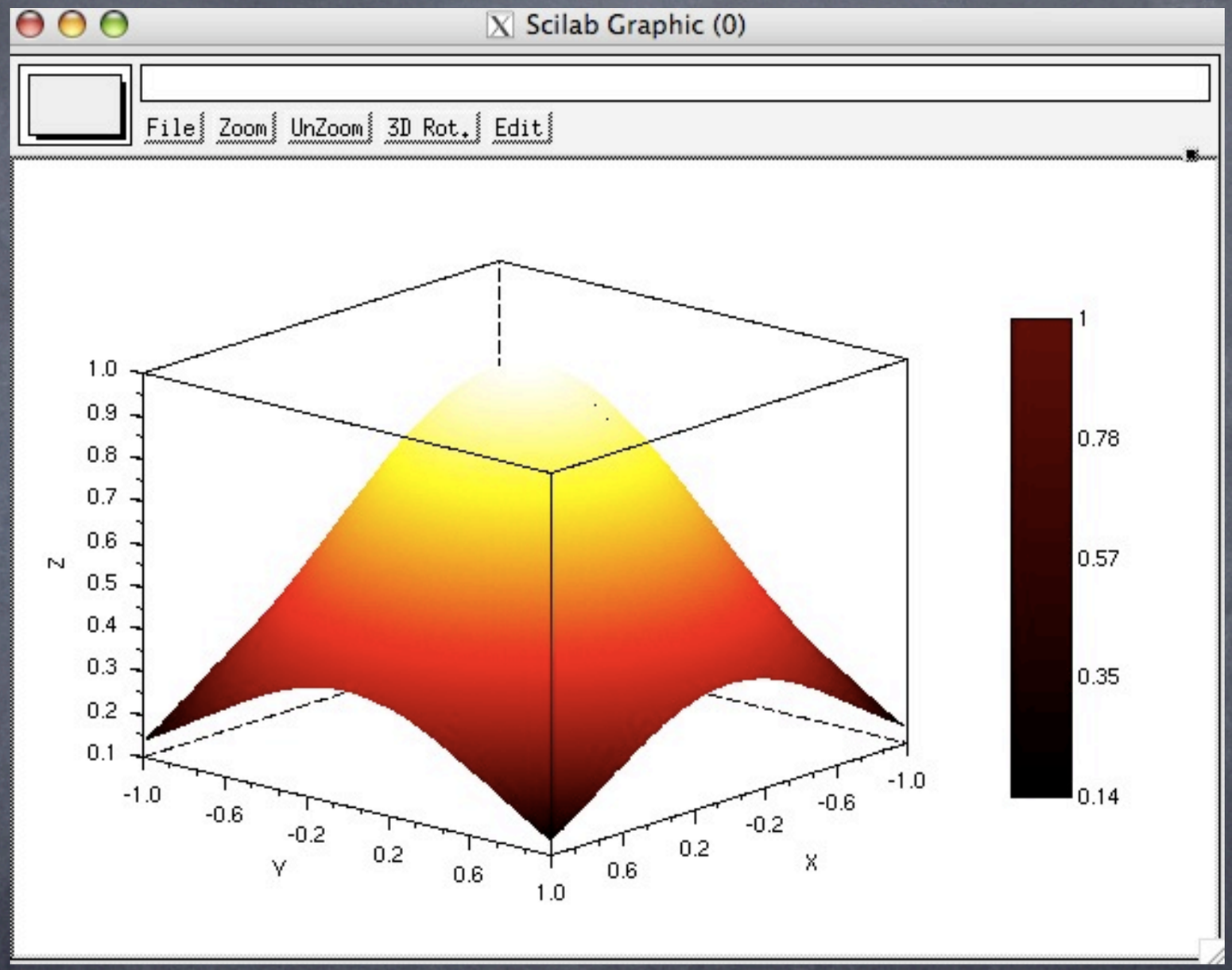


-> xset("colormap",cmap)

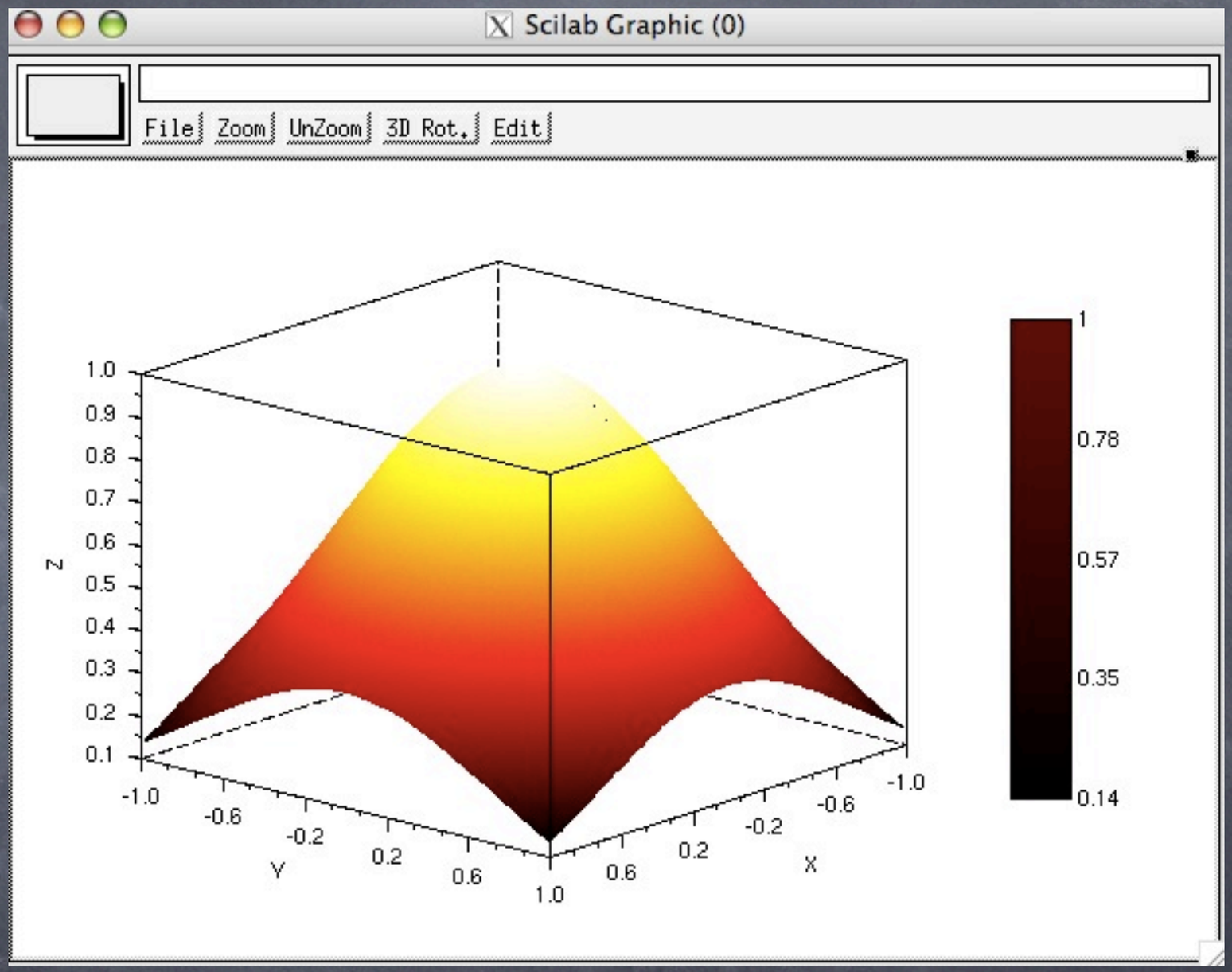


On a déjà moins l'impression de faire du tricot !

-> xset("colormap",cmap)



On a déjà moins l'impression de faire du tricot !
Mais la barre de couleur est à retracer:


Scilab Graphic (0)
File
Zoom
UnZoom
3D Rot.
Edit
Z
1.0
0.9
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0.7
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0.4
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Y
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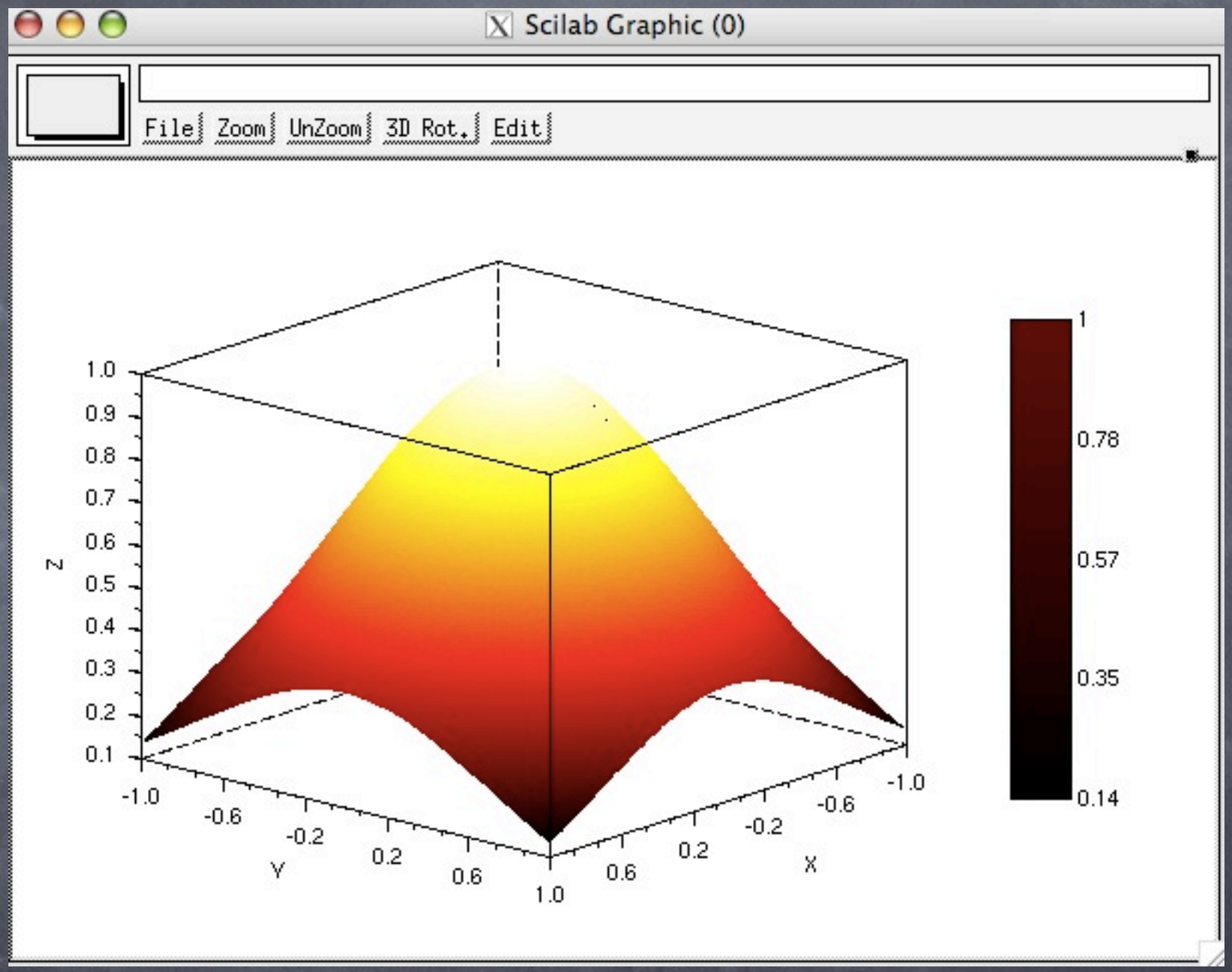
-0.6
-0.2
0.2
0.6
1.0
X
-1.0
-0.6
-0.2
0.2
0.6
1.0
1
0.78
0.57
0.35
0.14


Scilab Graphic (0)
File
Zoom
UnZoom
3D Rot.
Edit
Z
1.0
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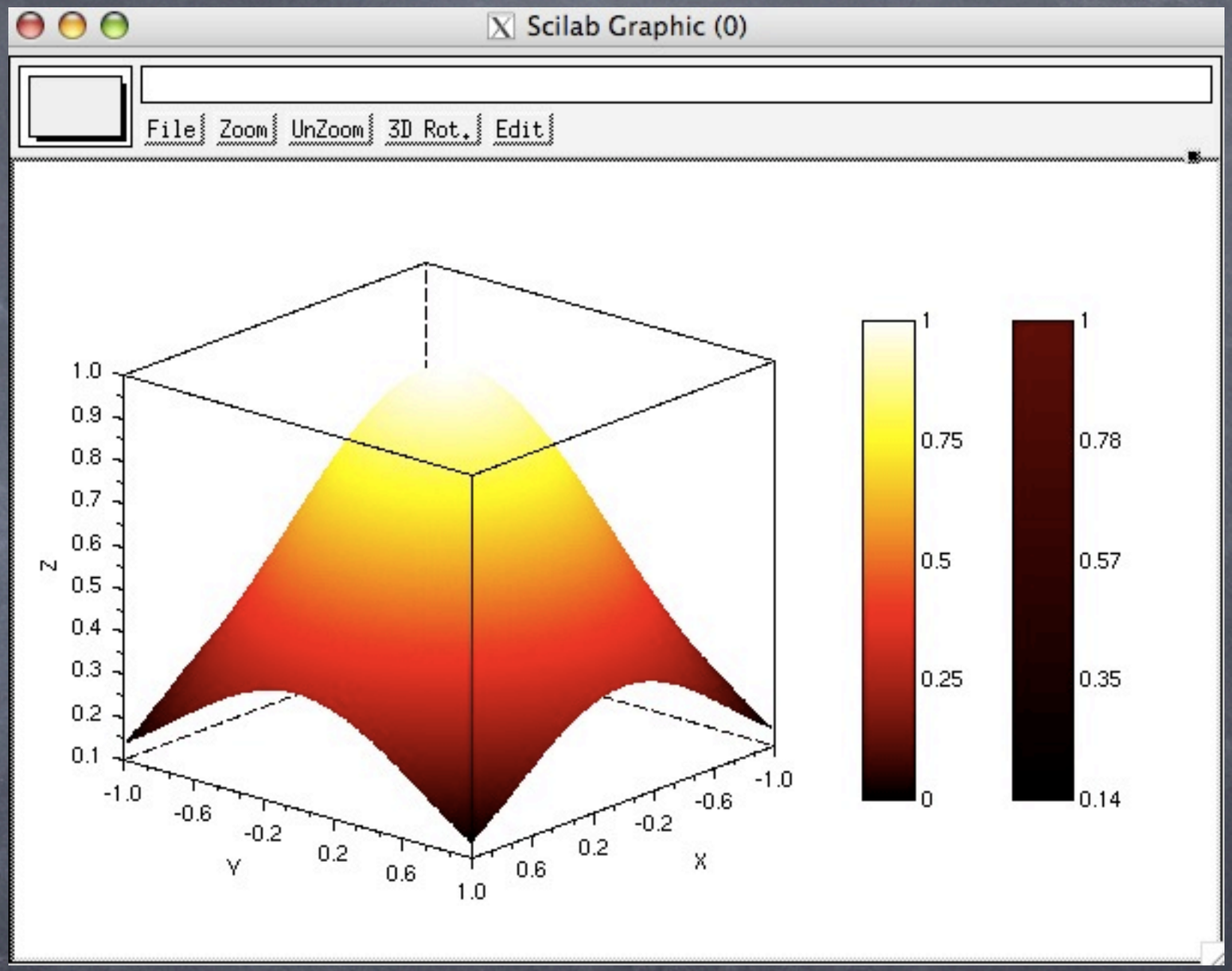
0.7
0.6
0.5
0.4
0.3
0.2
0.1
Y
-1.0
-0.6
-0.2
0.2
0.6
1.0
X
-1.0
-0.6
-0.2
0.2
0.6
1.0
0.78
0.57
0.35
0.14

```
>colorbar(0,1)
```


Scilab Graphic (0)
File
Zoom
UnZoom
3D Rot.
Edit
Z
1.0
0.9
0.8
0.7
0.6
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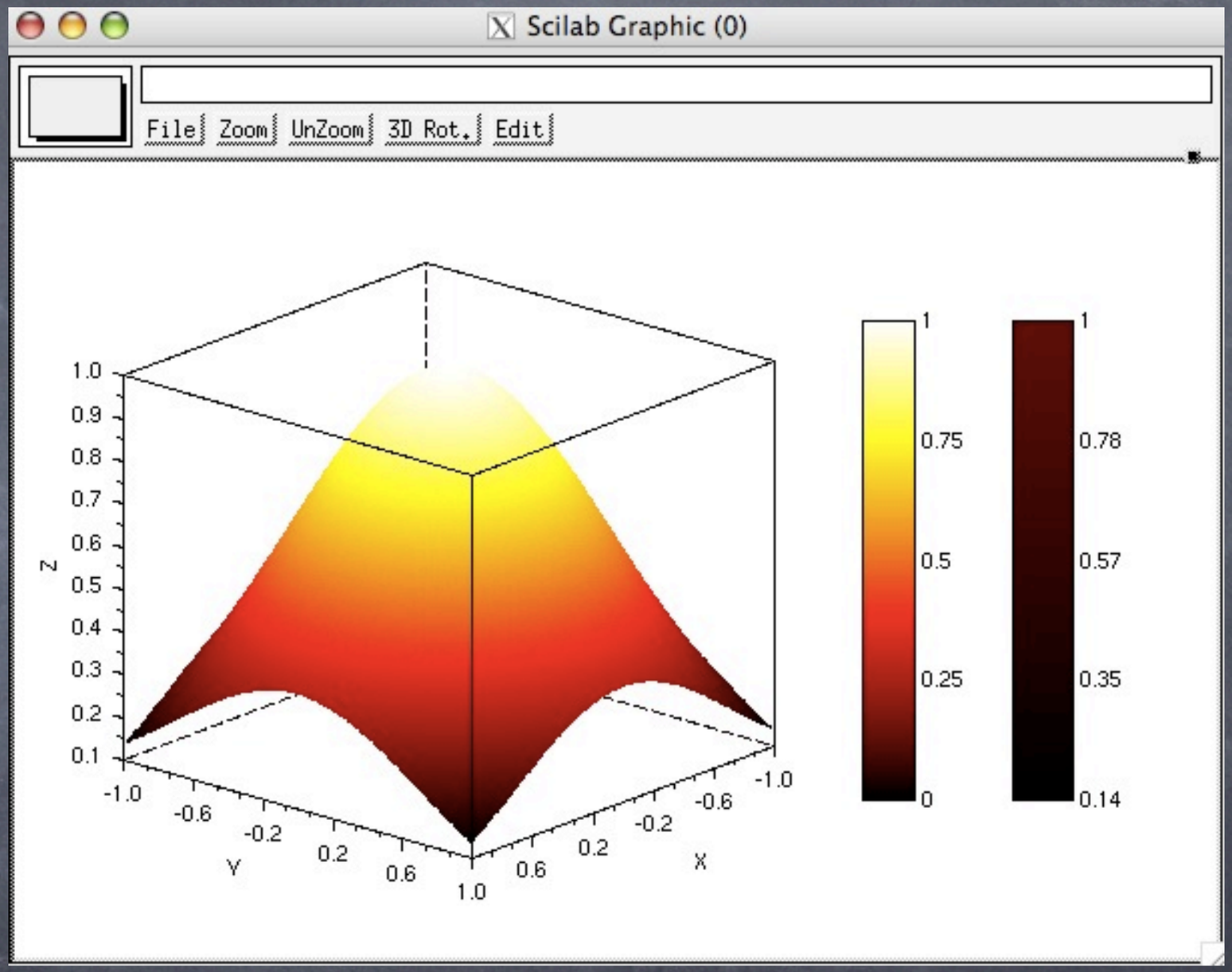
0.4
0.3
0.2
0.1
Y
-1.0
-0.6
-0.2
0.2
0.6
1.0
X
-1.0
-0.6
-0.2
0.2
0.6
1.0
1
0.75
0.5
0.25
0
1
0.78
0.57
0.35
0.14

```
>colorbar(0,1)
```




```
>colorbar(0,1)
```

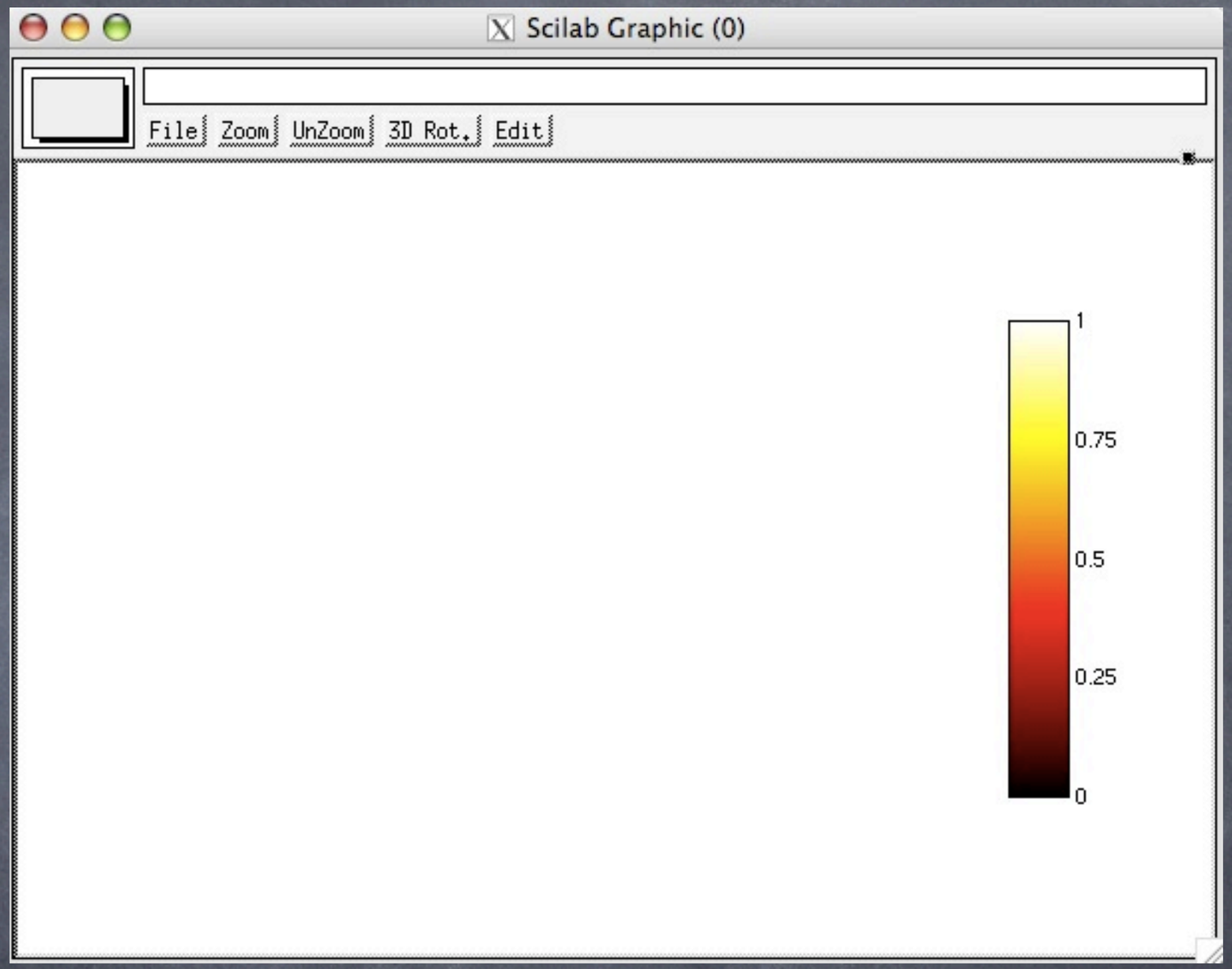
Pas de chance : il faut tracer la barre de couleurs avant !
Reprenons:

```
-->clf()
```

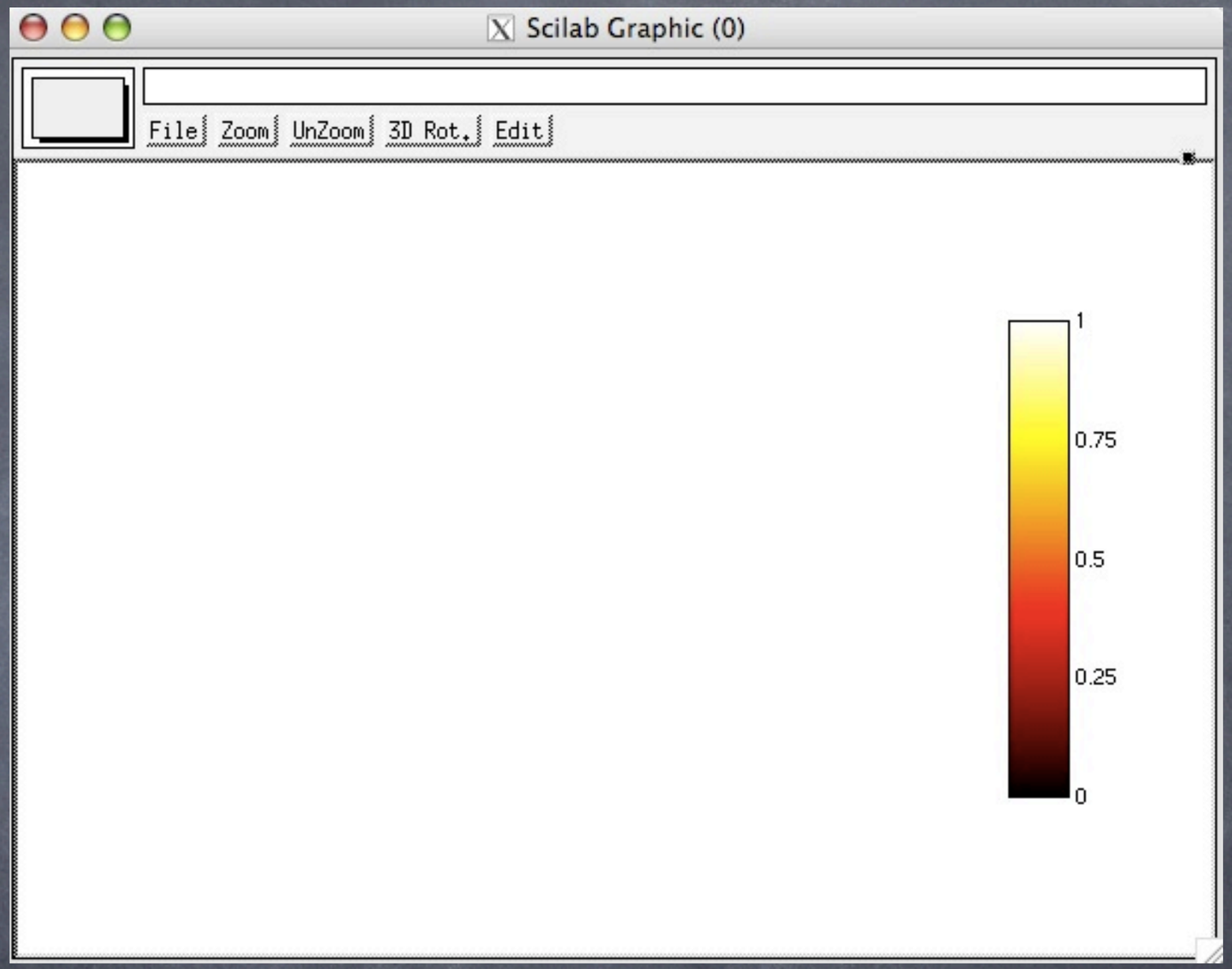
```
-->clf()
 -->colorbar(0,1)
```

```
-->clf()
 -->colorbar(0,1)
```

```
-->clf()
 -->colorbar(0,1)
```

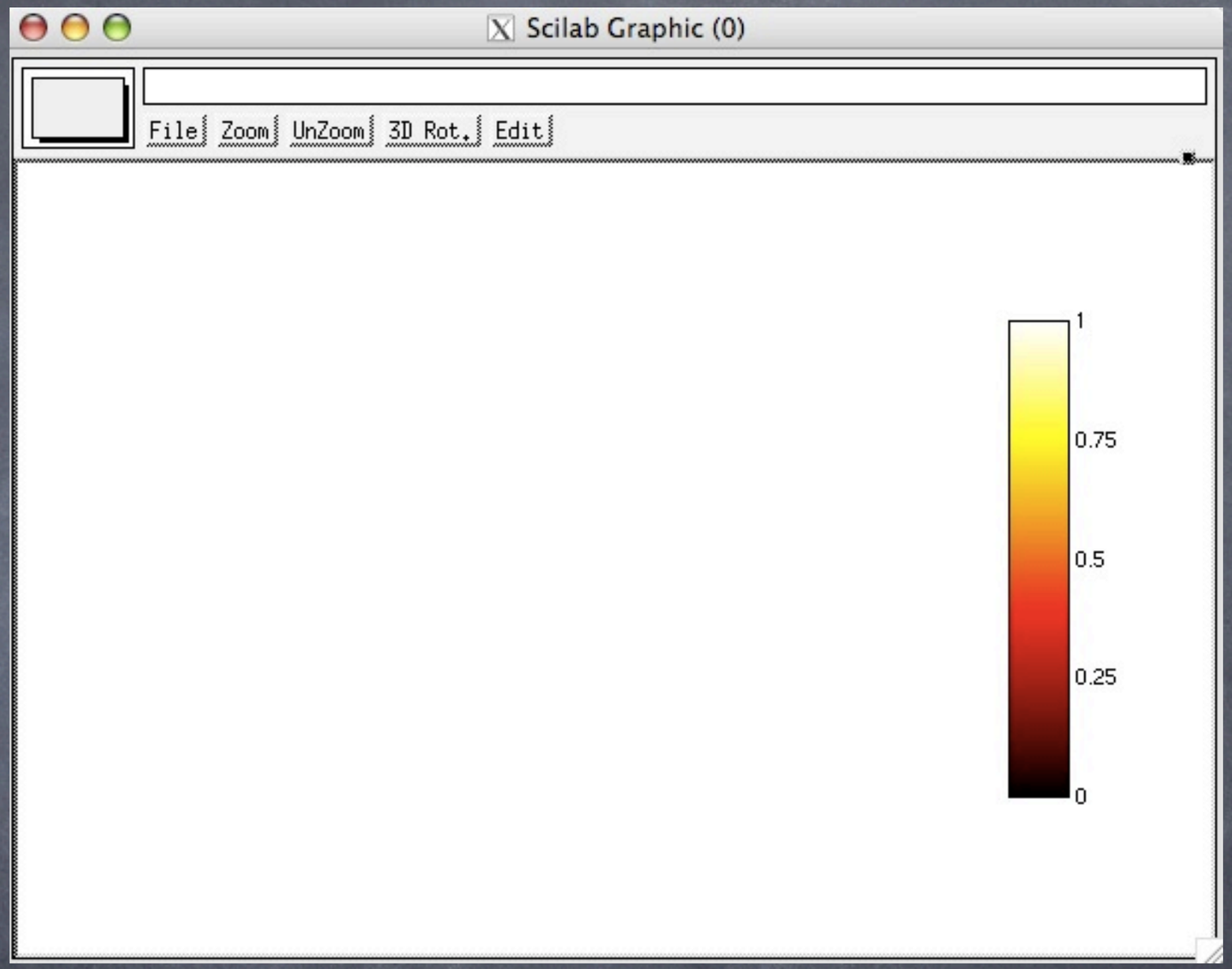


```
-->clf()
 -->colorbar(0,1)
```



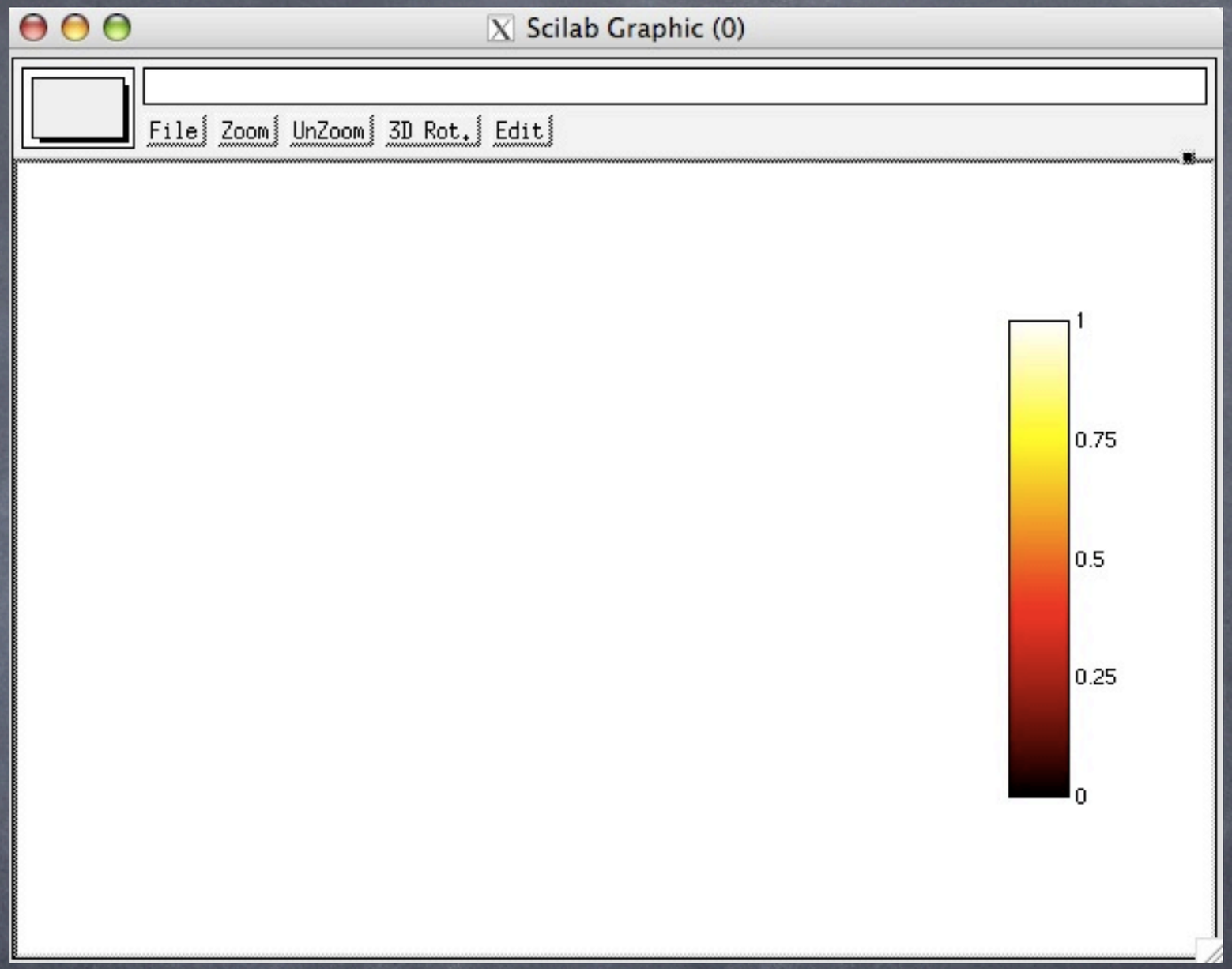
```
-->clf()
 -->colorbar(0,1)
```

// Parfait



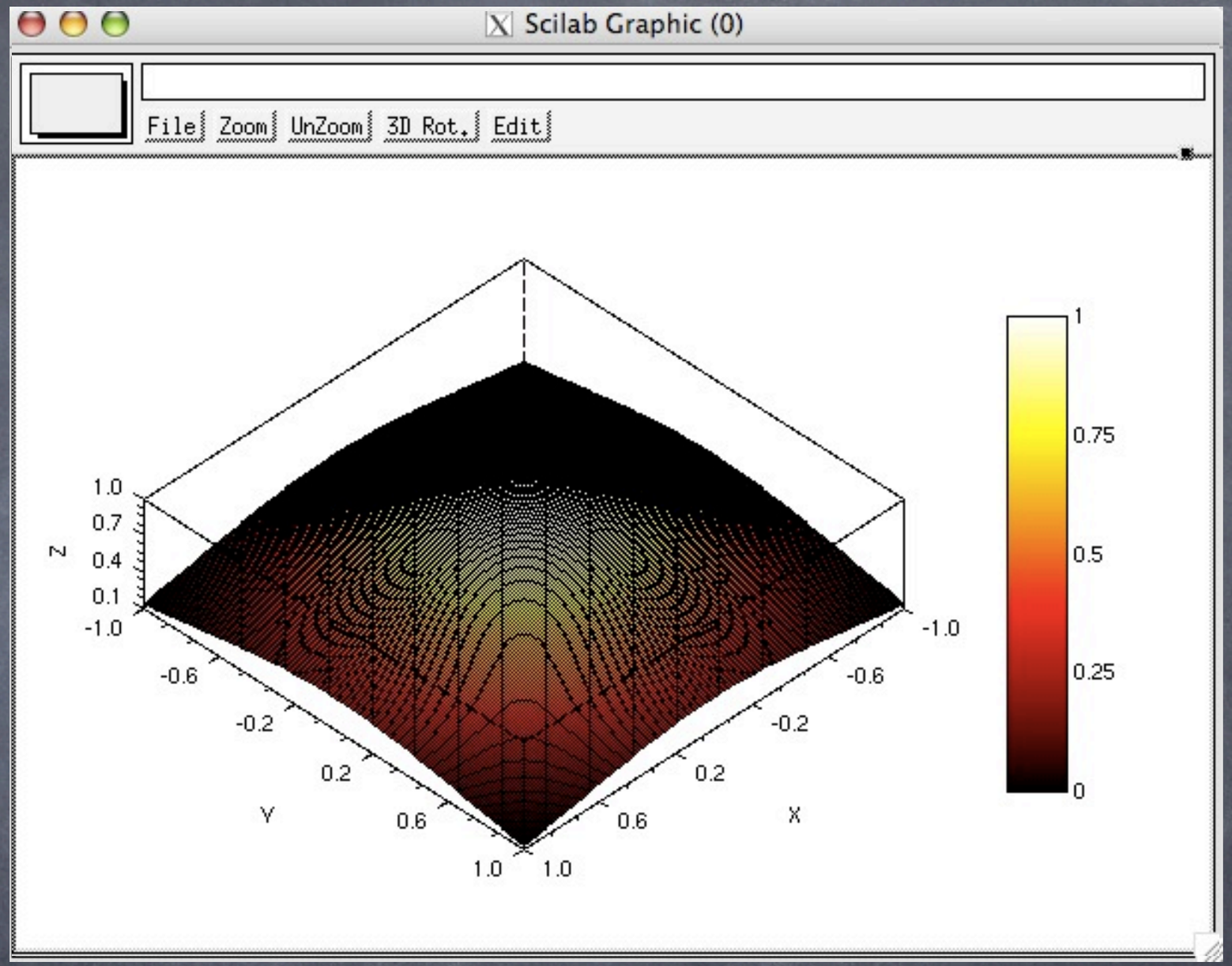
```
-->clf()
 -->colorbar(0,1)


 // Parfait
 -->plot3d1(xb,yb,zcb)
```



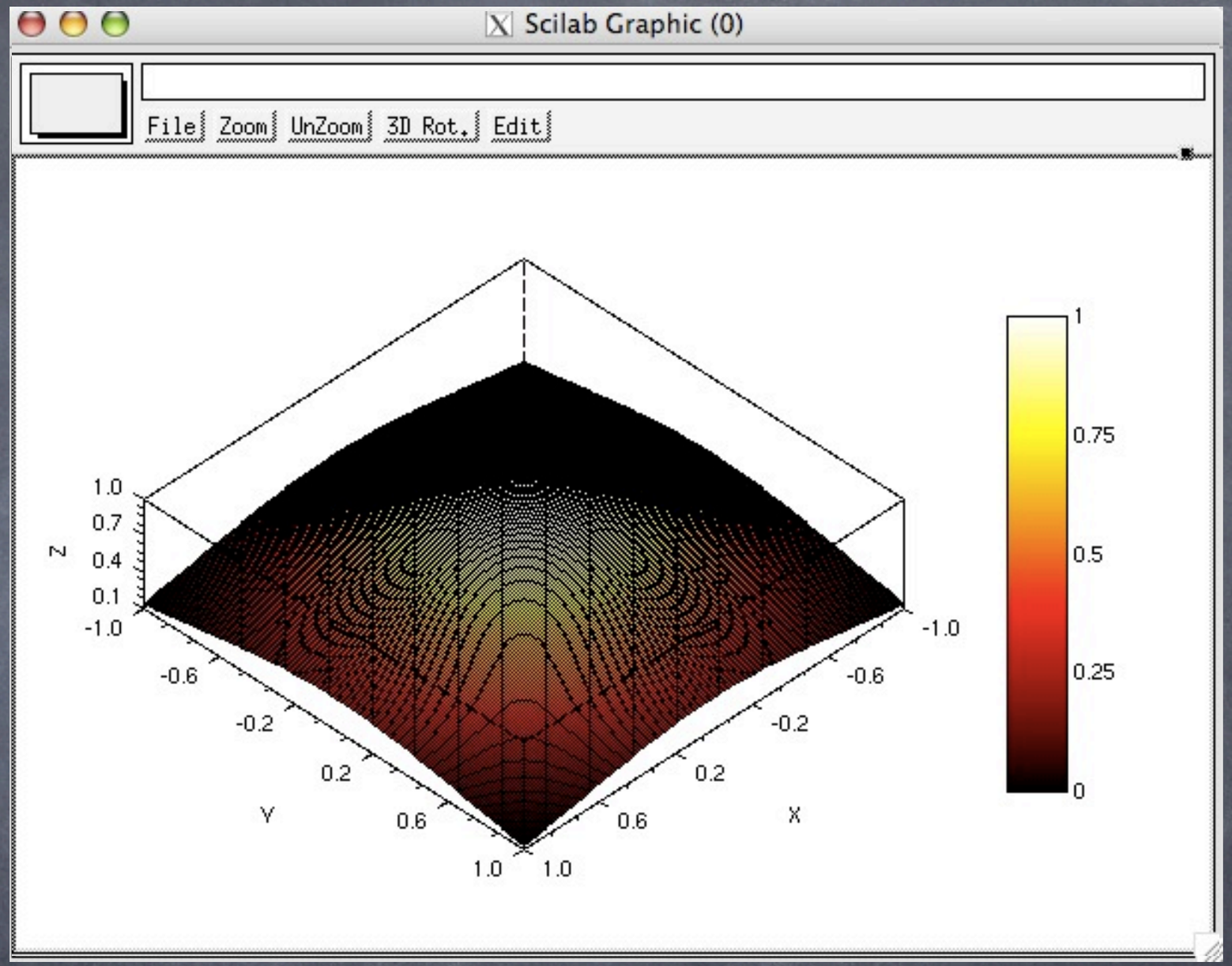
```
-->clf()
 -->colorbar(0,1)


 // Parfait
 -->plot3d1(xb,yb,zcb)
```



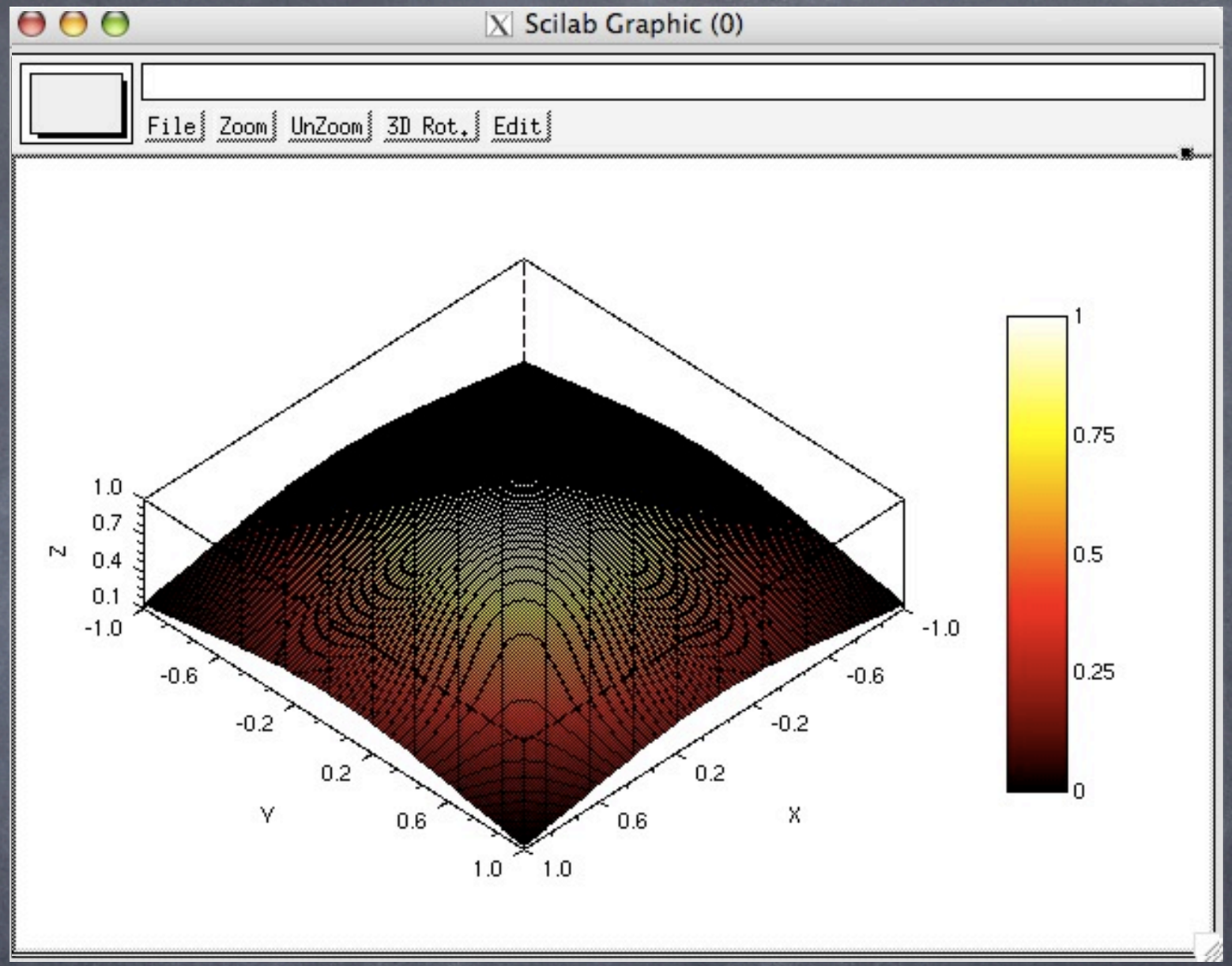
```
-->clf()
 -->colorbar(0,1)


 // Parfait
 -->plot3d1(xb,yb,zcb)
```



```
-->clf()
 -->colorbar(0,1)
```

```
// Parfait
-->plot3d1(xb,yb,zcb)
```

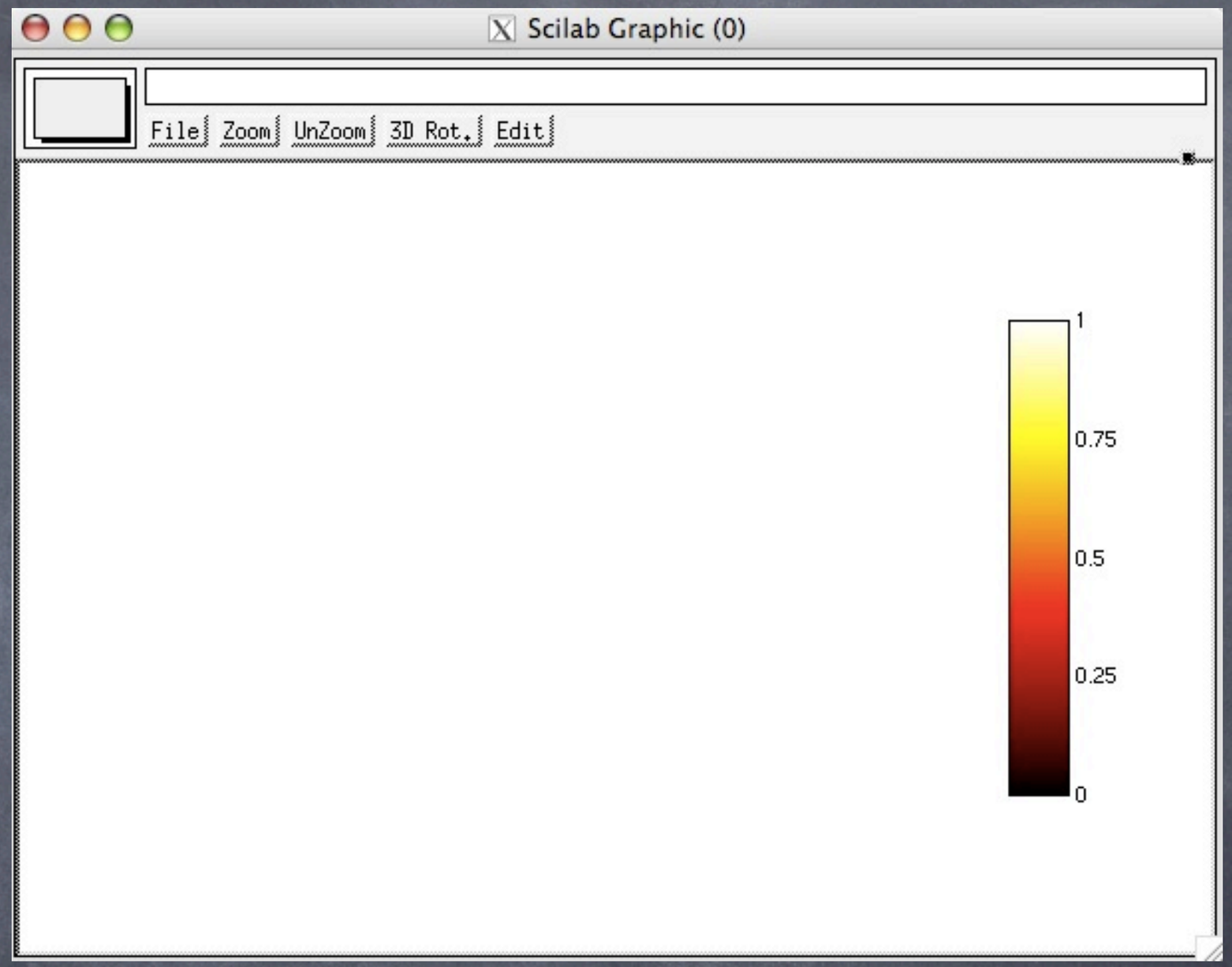



```
// frustrant
```

```
-->clf()
```

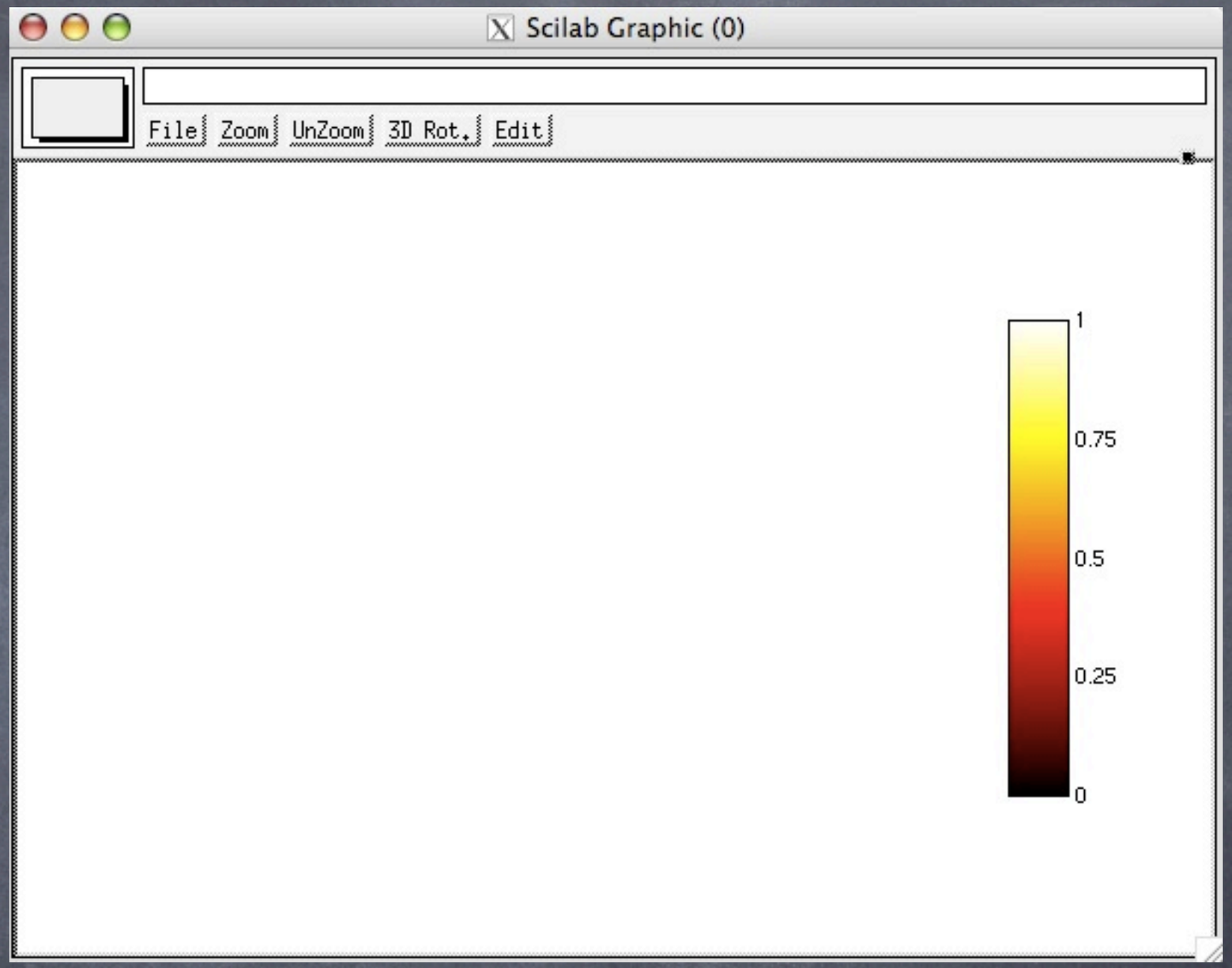
```
-->clf()
 -->colorbar(0,1)
```

```
-->clf()
-->colorbar(0,1)
```



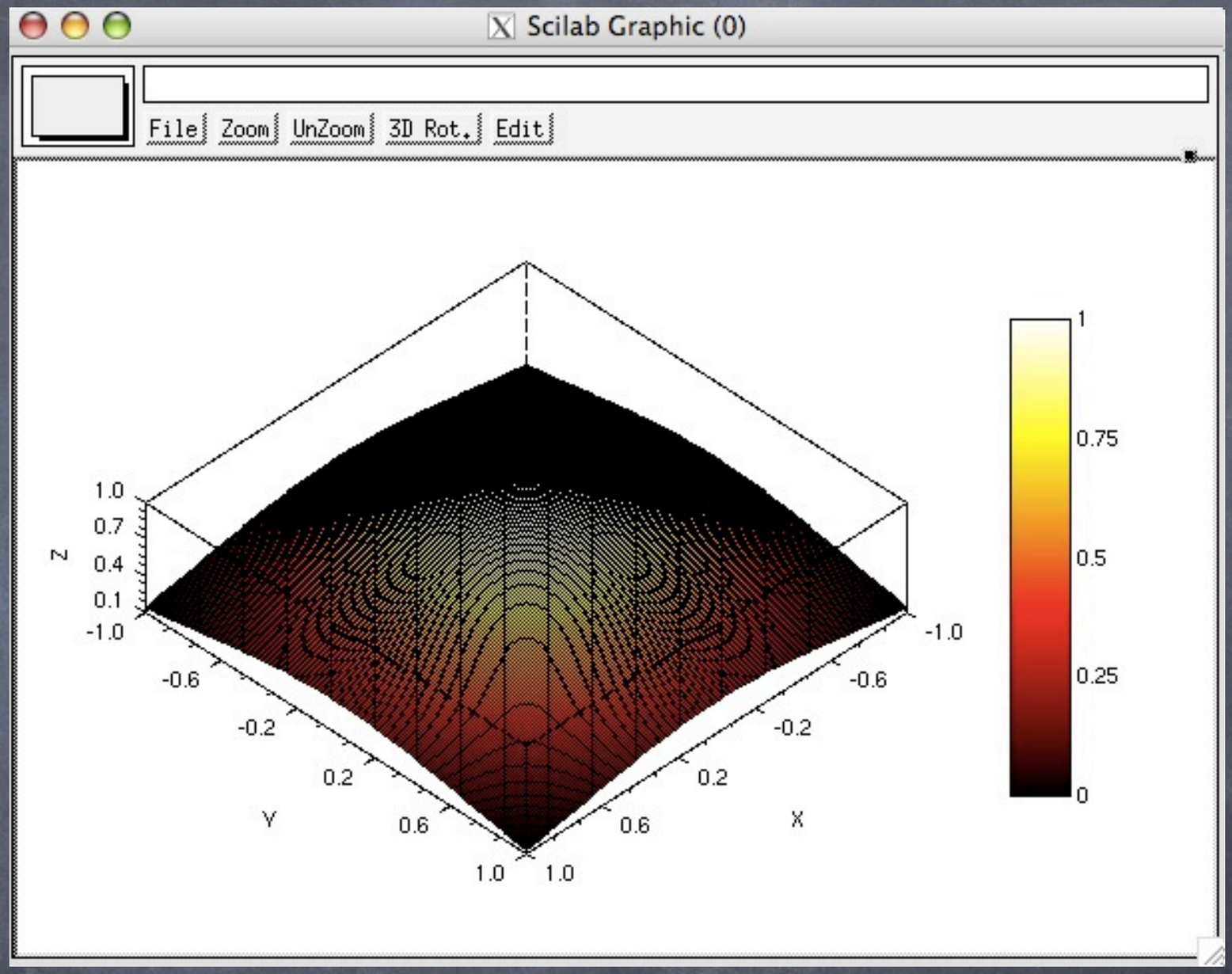
```
-->clf()
 -->colorbar(0,1)

-->plot3d1(xb,yb,zcb)
```



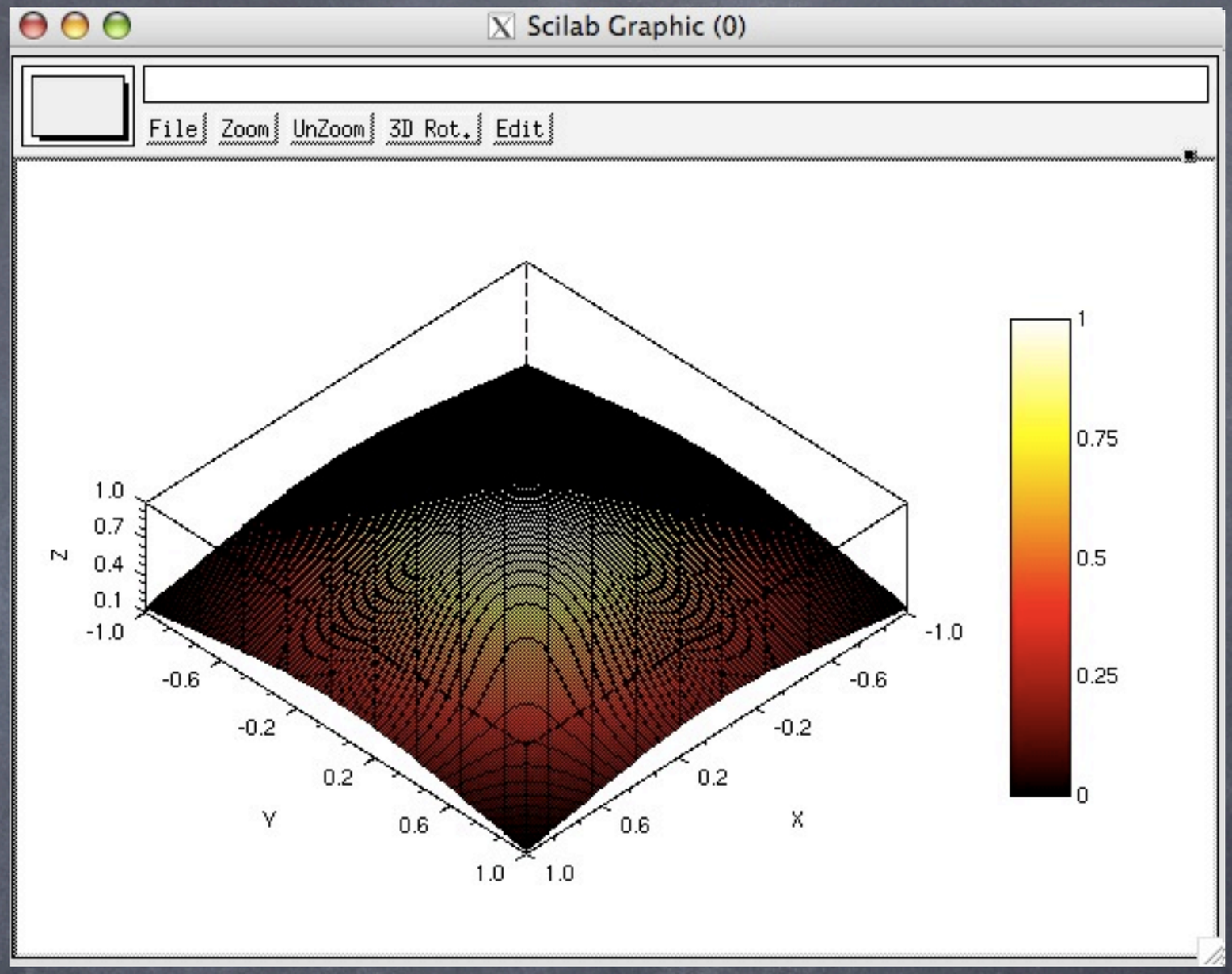
```
-->clf()
 -->colorbar(0,1)

-->plot3d1(xb,yb,zcb)
```



```
-->clf()
 -->colorbar(0,1)
```

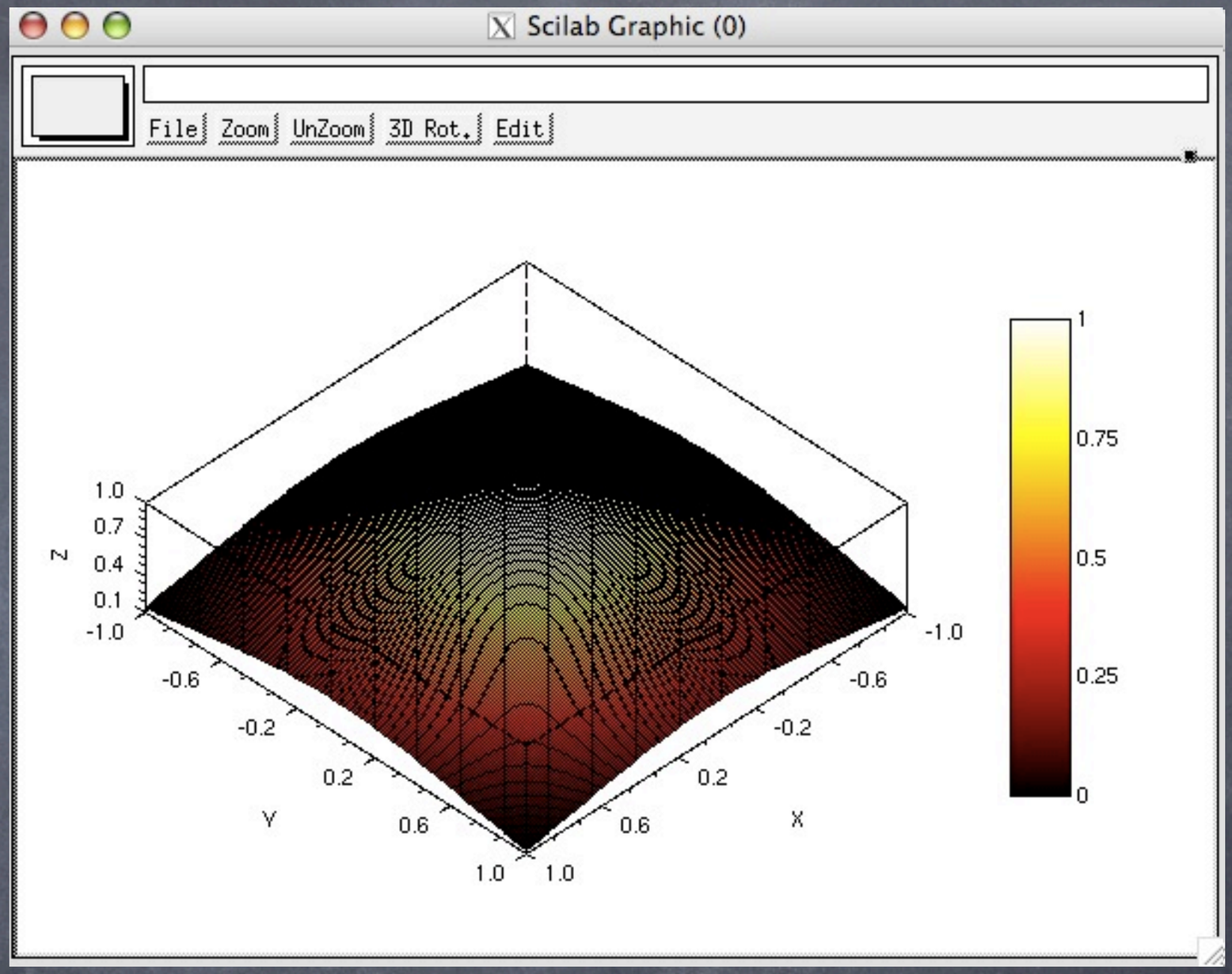
```
-->plot3d1(xb,yb,zcb)
```




```
-->h=get("hdl");
```

```
-->clf()
 -->colorbar(0,1)
```

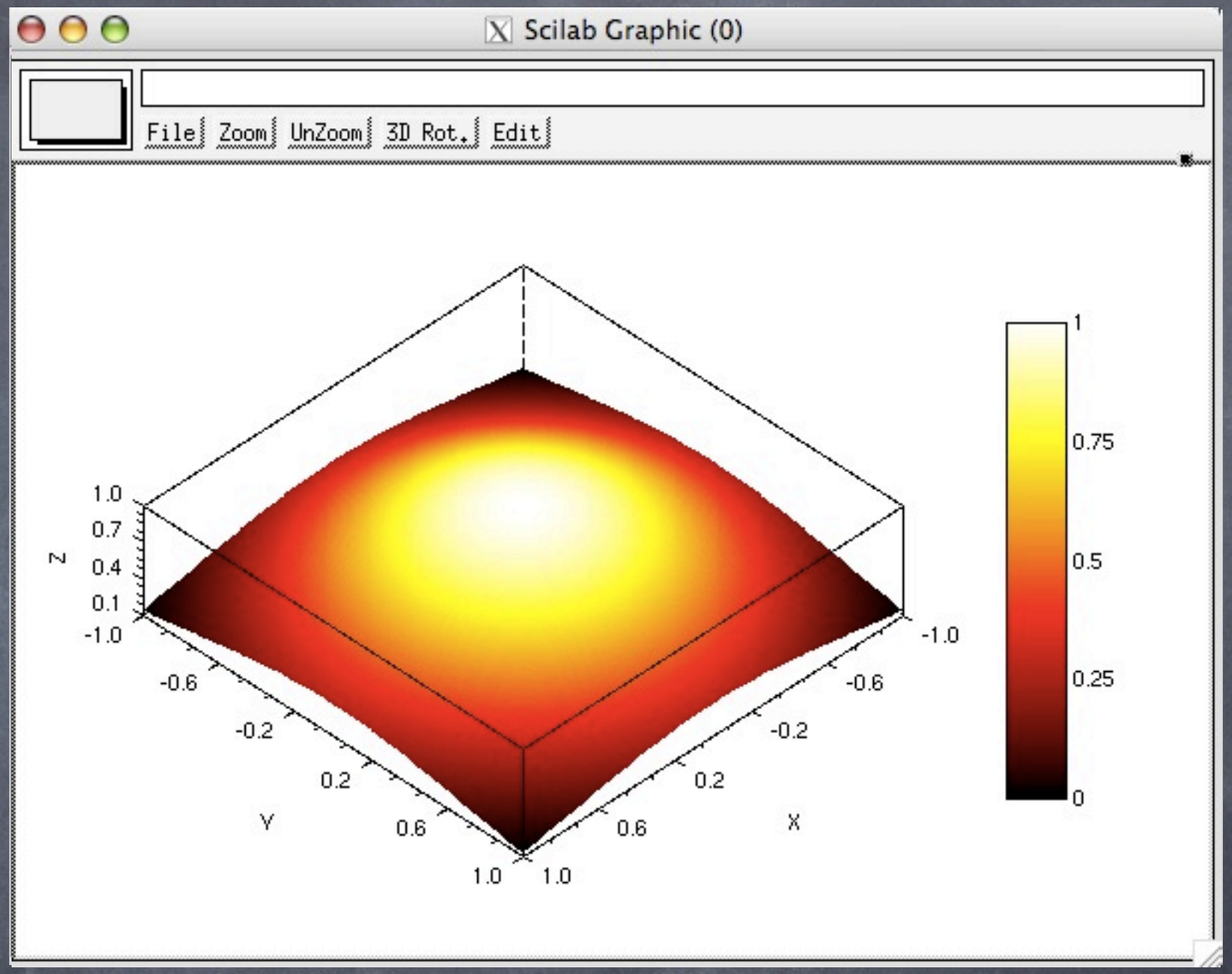
```
-->plot3d1(xb,yb,zcb)
```




```
-->h=get("hdl");
 -->hcolor_mode=-2;
```

```
-->clf()
 -->colorbar(0,1)
```

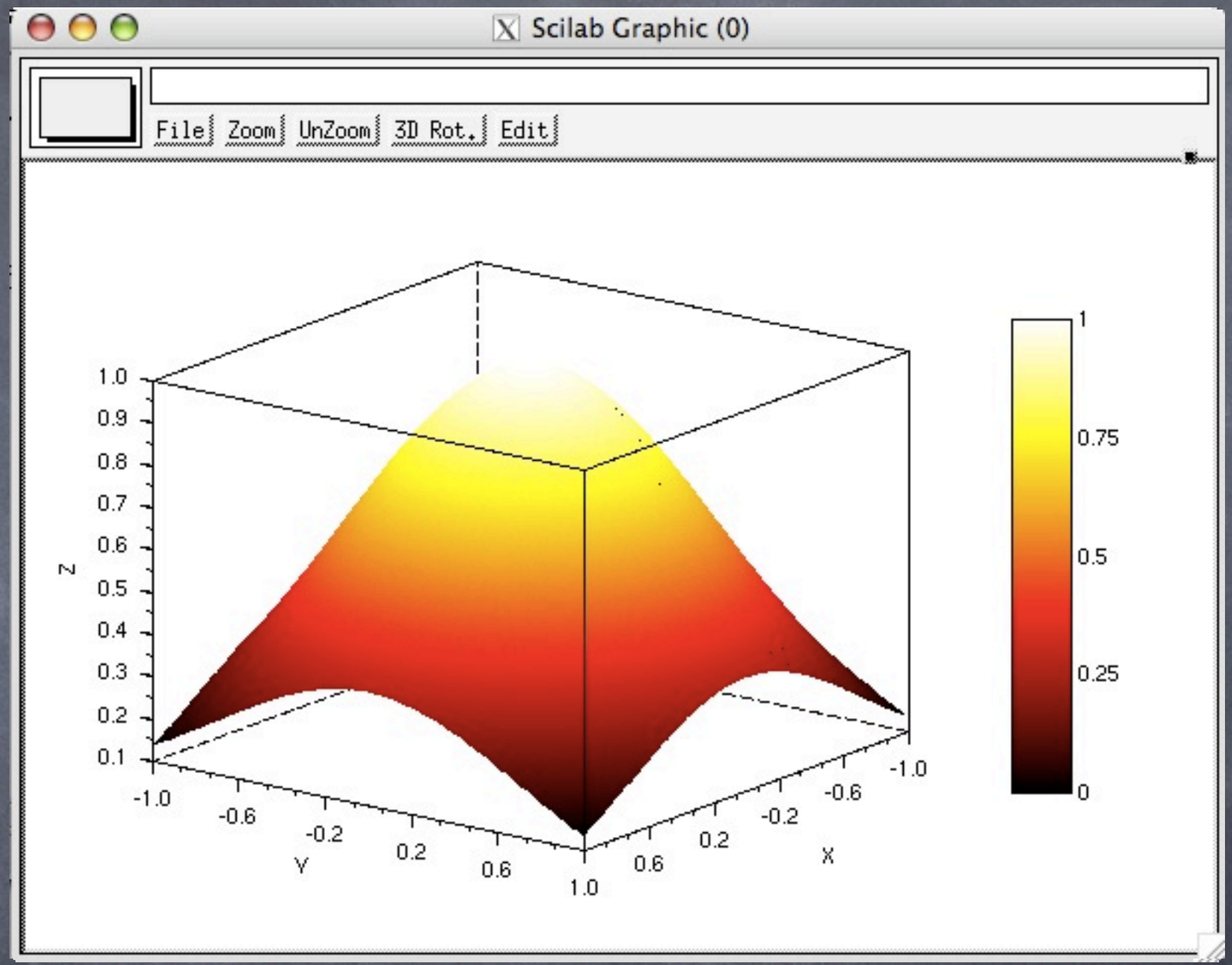
```
-->plot3d1(xb,yb,zcb)
```




```
-->h=get("hdl");
 -->hcolor_mode=-2;
```

```
-->clf()
 -->colorbar(0,1)
```

```
-->plot3d1(xb,yb,zcb)
```

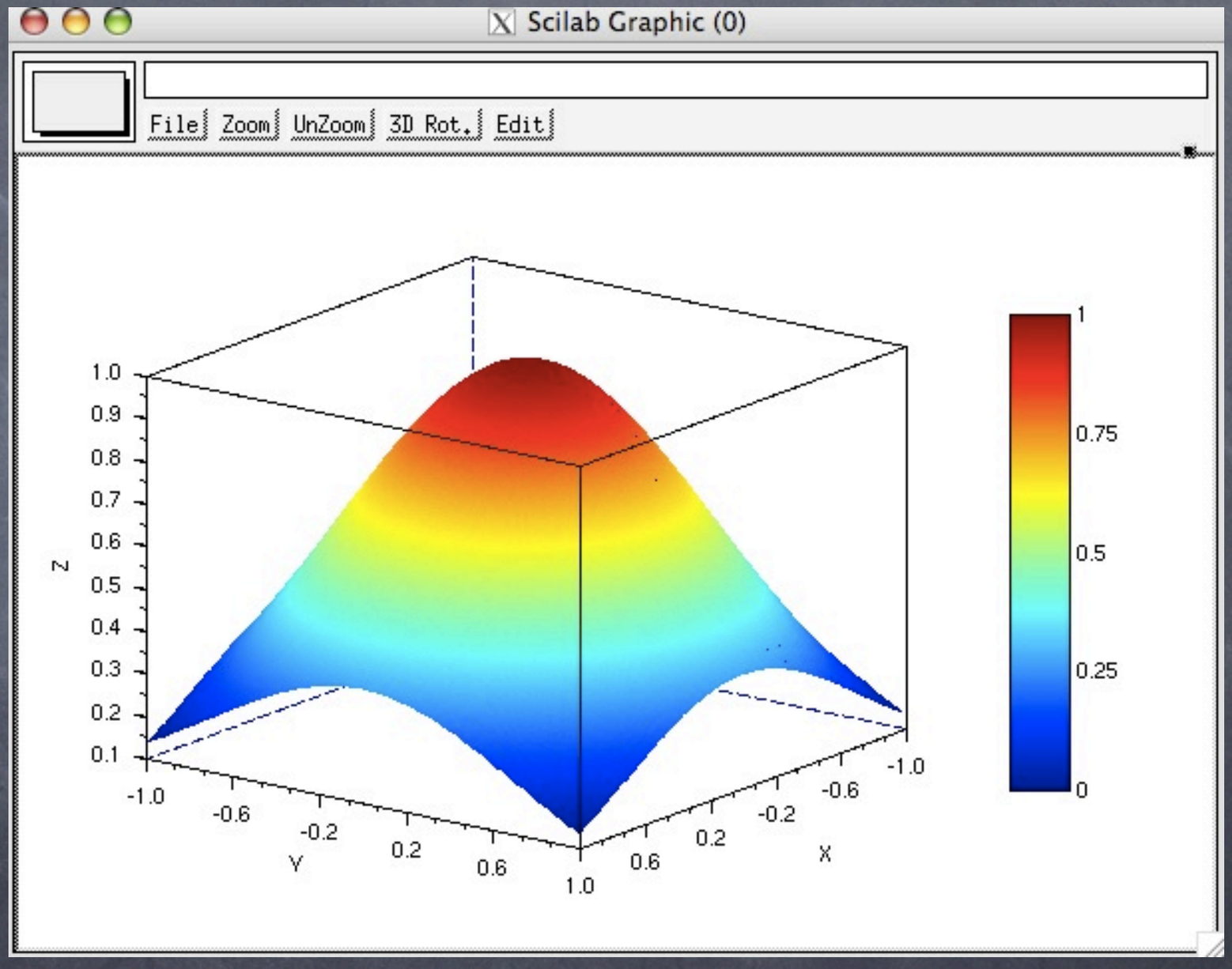


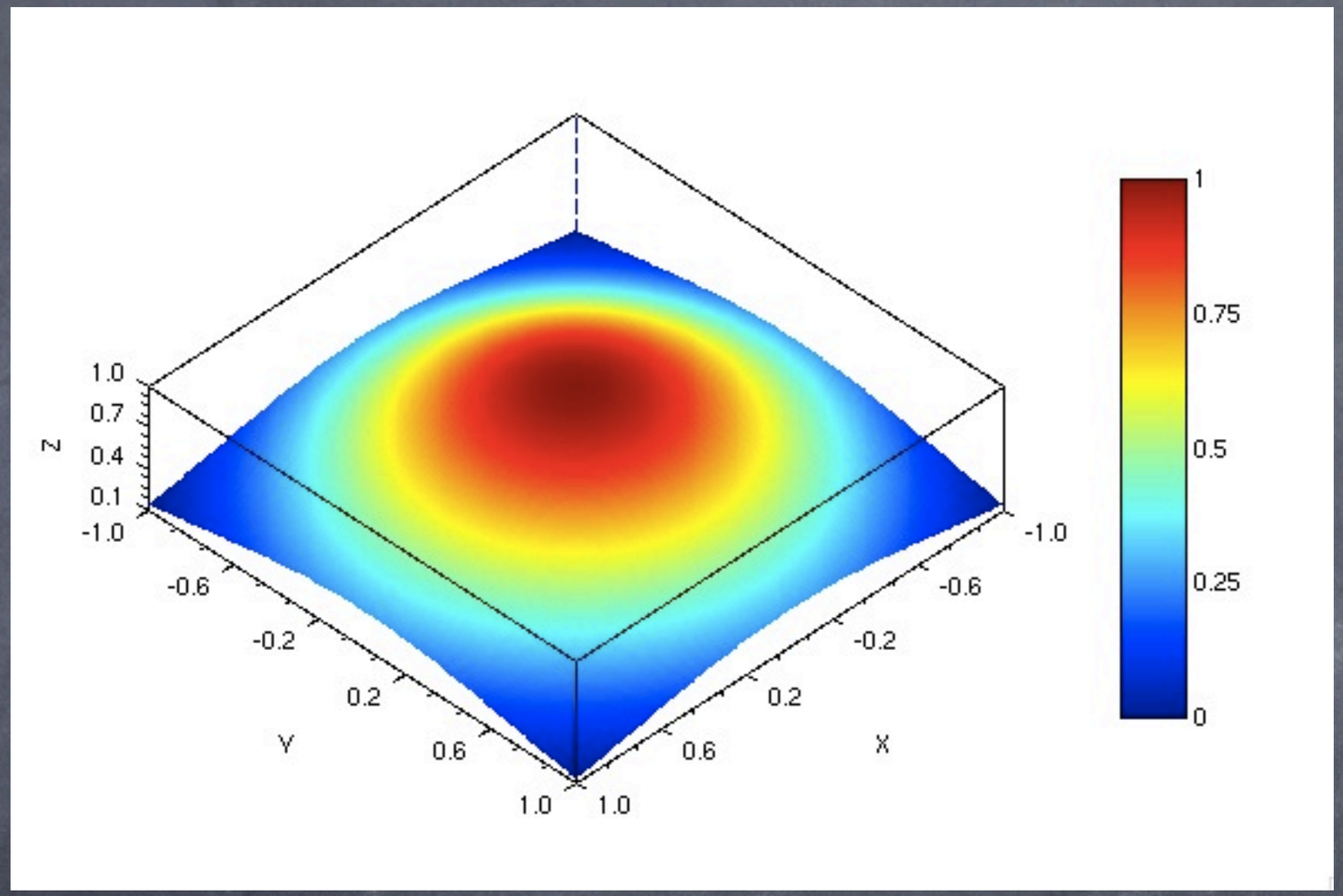

```
-->h=get("hdl");
 -->hcolor_mode=-2;
```

// Avec des autres couleurs:

```
// Avec des autres couleurs:
cmap=jetcolormap(256)
```

// Avec des autres couleurs:
cmap=jetcolormap(256)




1.0
0.7
0.4
0.1
Z
-1.0
-0.6
-0.2
0.2
0.6
1.0
Y
-1.0
-0.6
-0.2
0.2
0.6
1.0
X
1
0.75
0.5
0.25
0

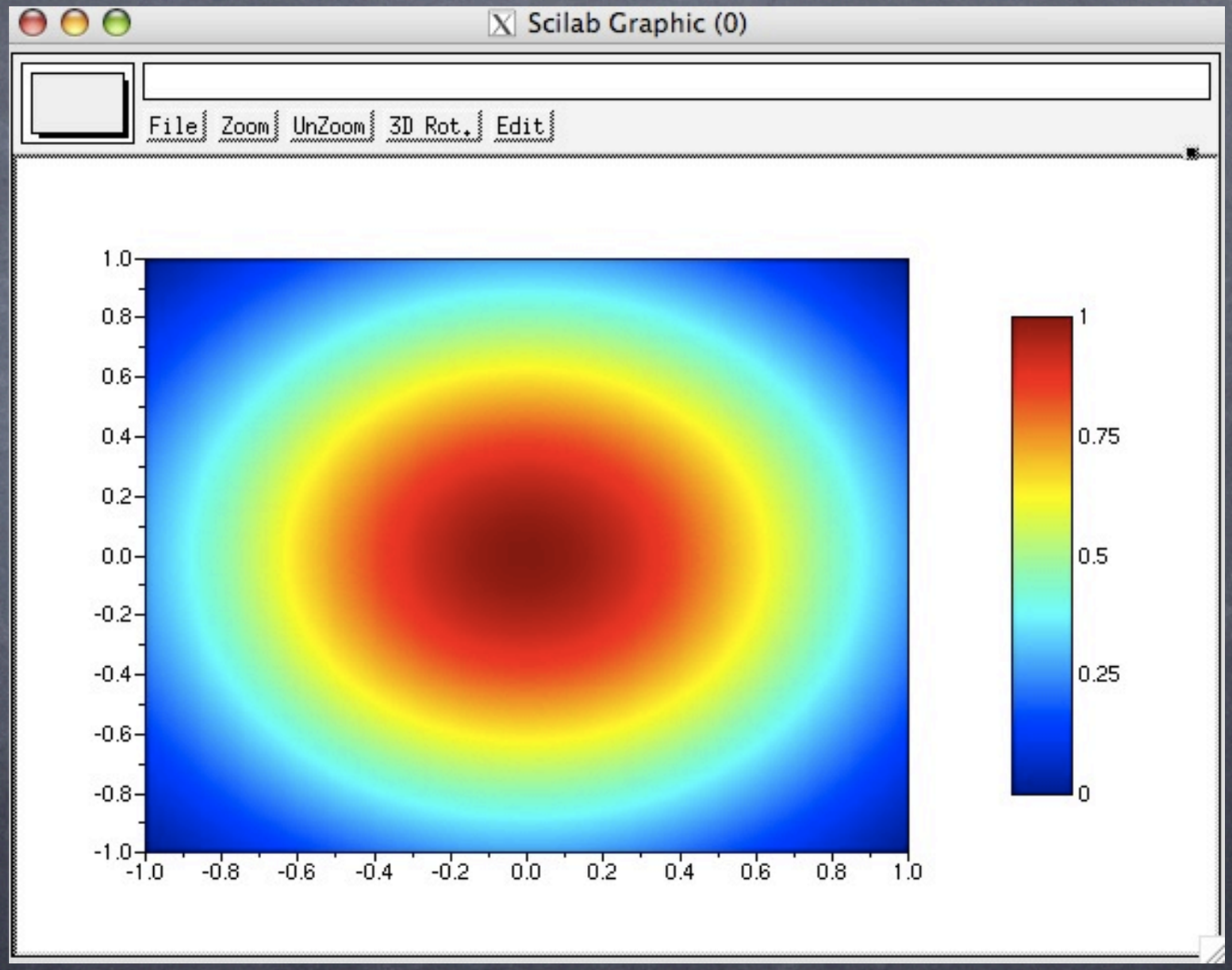
// ou bien en dessin plan

```
// ou bien en dessin plan
clf()
```

```
// ou bien en dessin plan
clf()
colorbar(0,1)
```

```
// ou bien en dessin plan
clf()
colorbar(0,1)
Sgrayplot(xb,yb,zcb)
```

```
// ou bien en dessin plan
clf()
colorbar(0,1)
Sgrayplot(xb,yb,zcb)
```



-->cl f()

?

```
-->clf()
-->cmap(:,1)=0;
```

?

```
-->clf()
-->cmap(:,1)=0;
-->xset("colormap",cmap);
```

?

```
-->clf()
-->cmap(:,1)=0;
-->xset("colormap",cmap);
 -->colorbar(0,1)
```

?

```
-->clf()
-->cmap(:,1)=0;
-->xset("colormap",cmap);
 -->colorbar(0,1)
-->plot3d1(xb,yb,zcb);
```

?

```
-->clf()
-->cmap(:,1)=0;
-->xset("colormap",cmap);
 -->colorbar(0,1)
-->plot3d1(xb,yb,zcb);
-->h=get("hdl");
```

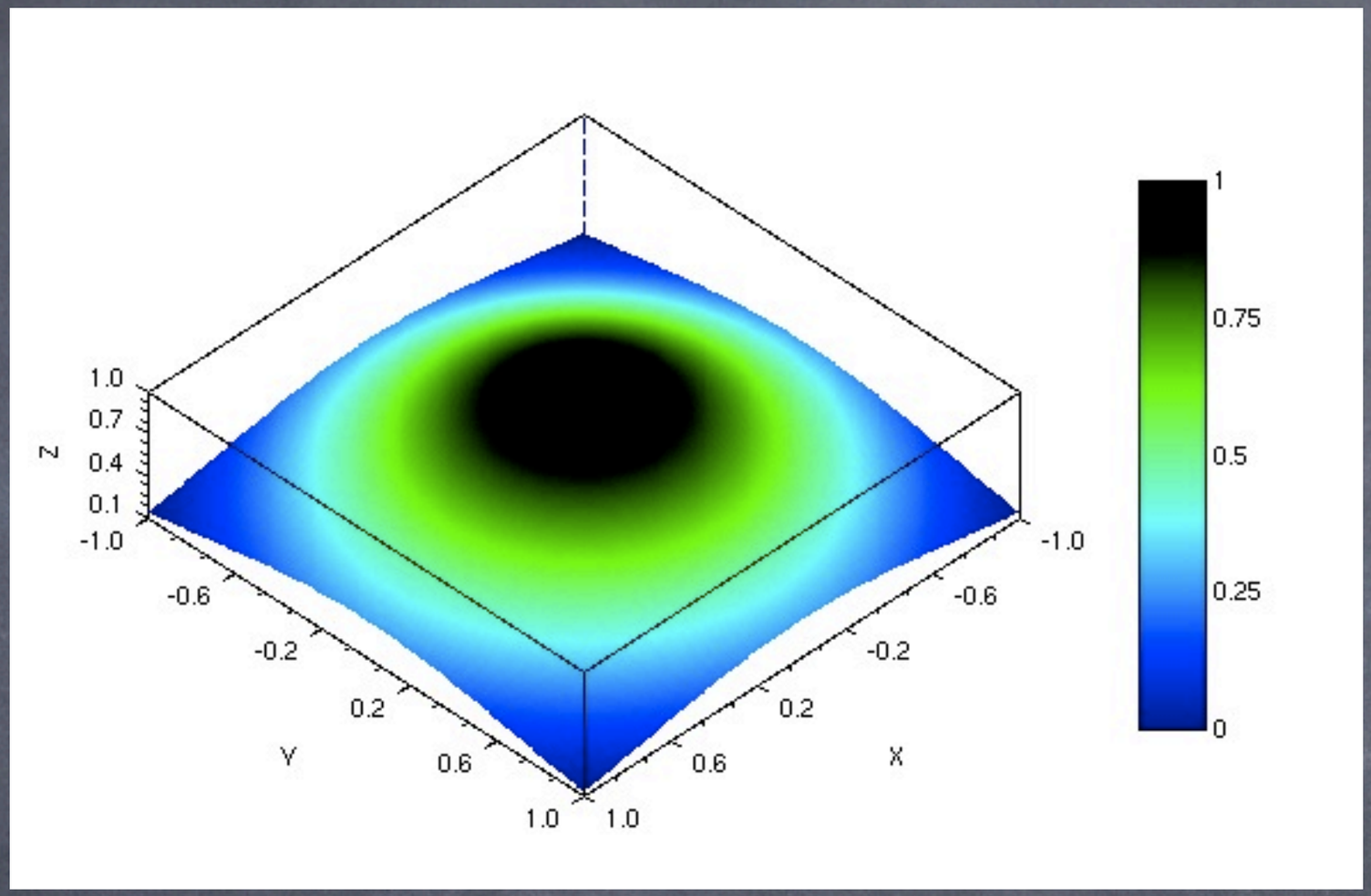
?

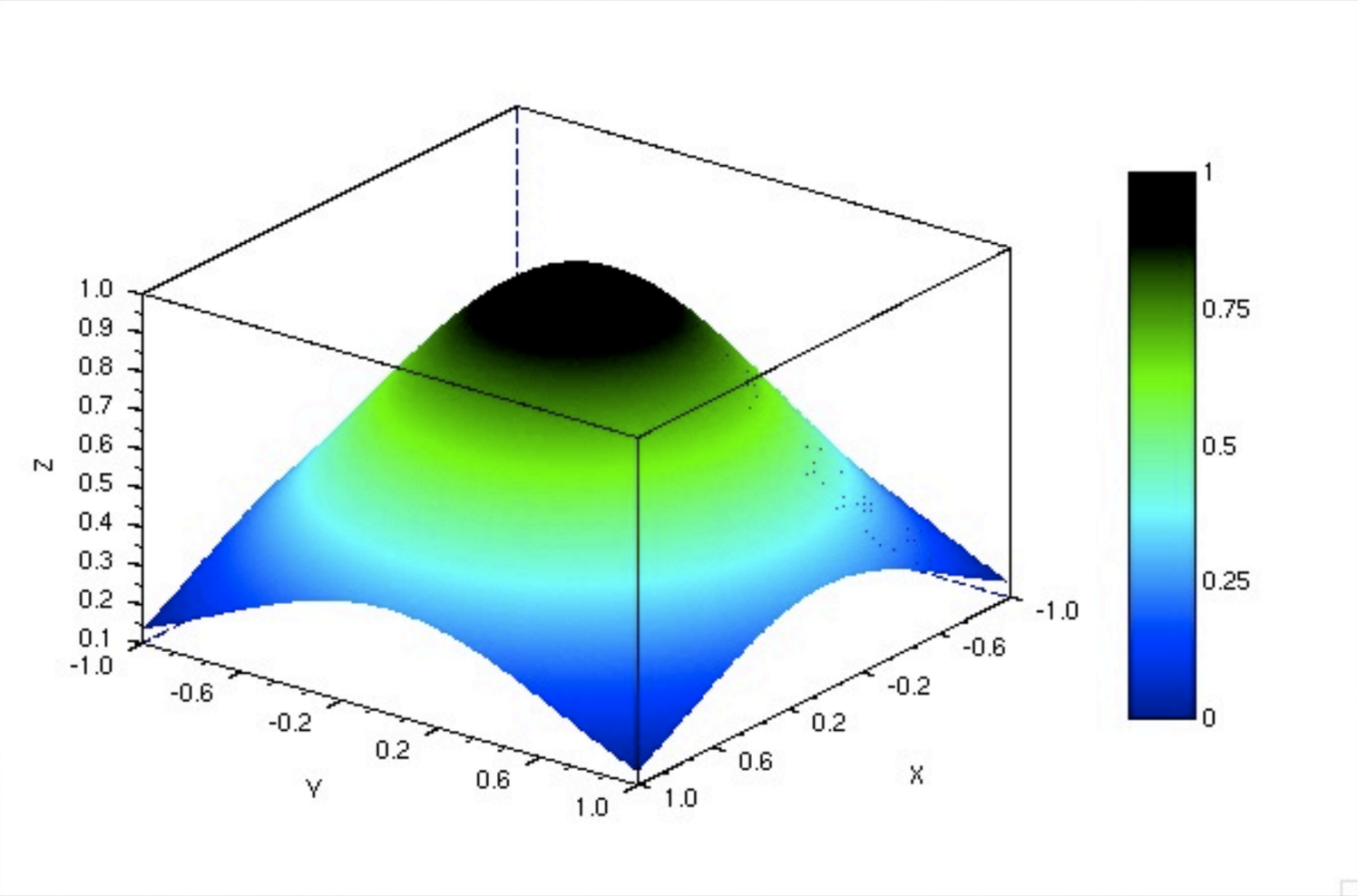
```
-->clf()
-->cmap(:,1)=0;
-->xset("colormap",cmap);
 -->colorbar(0,1)
-->plot3d1(xb,yb,zcb);
-->h=get("hdl");
-->hcolor_mode=-2;
```

?

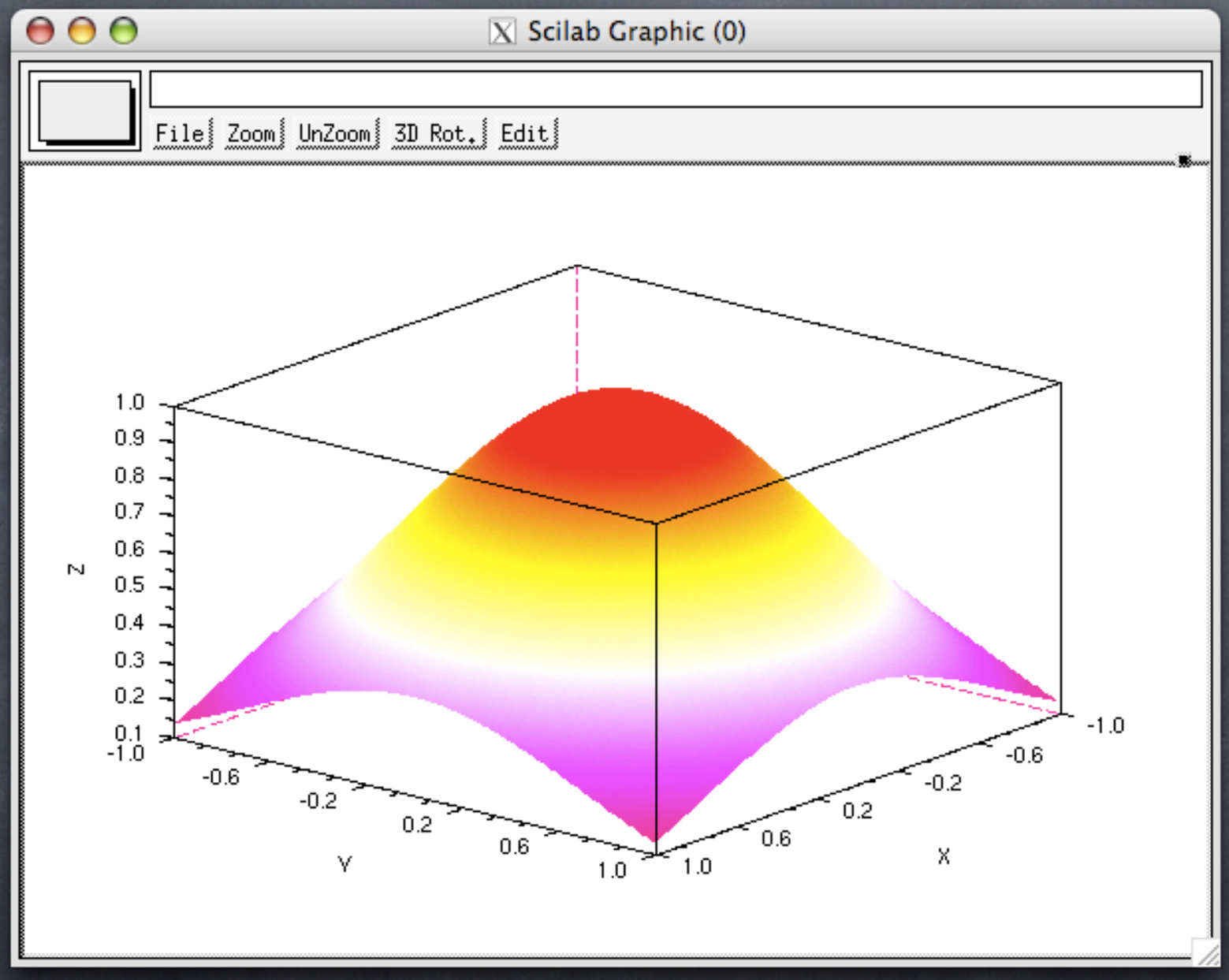
```
-->clf()
-->cmap(:,1)=0;
-->xset("colormap",cmap);
 -->colorbar(0,1)
-->plot3d1(xb,yb,zcb);
-->h=get("hdl");
-->hcolor_mode=-2;
```

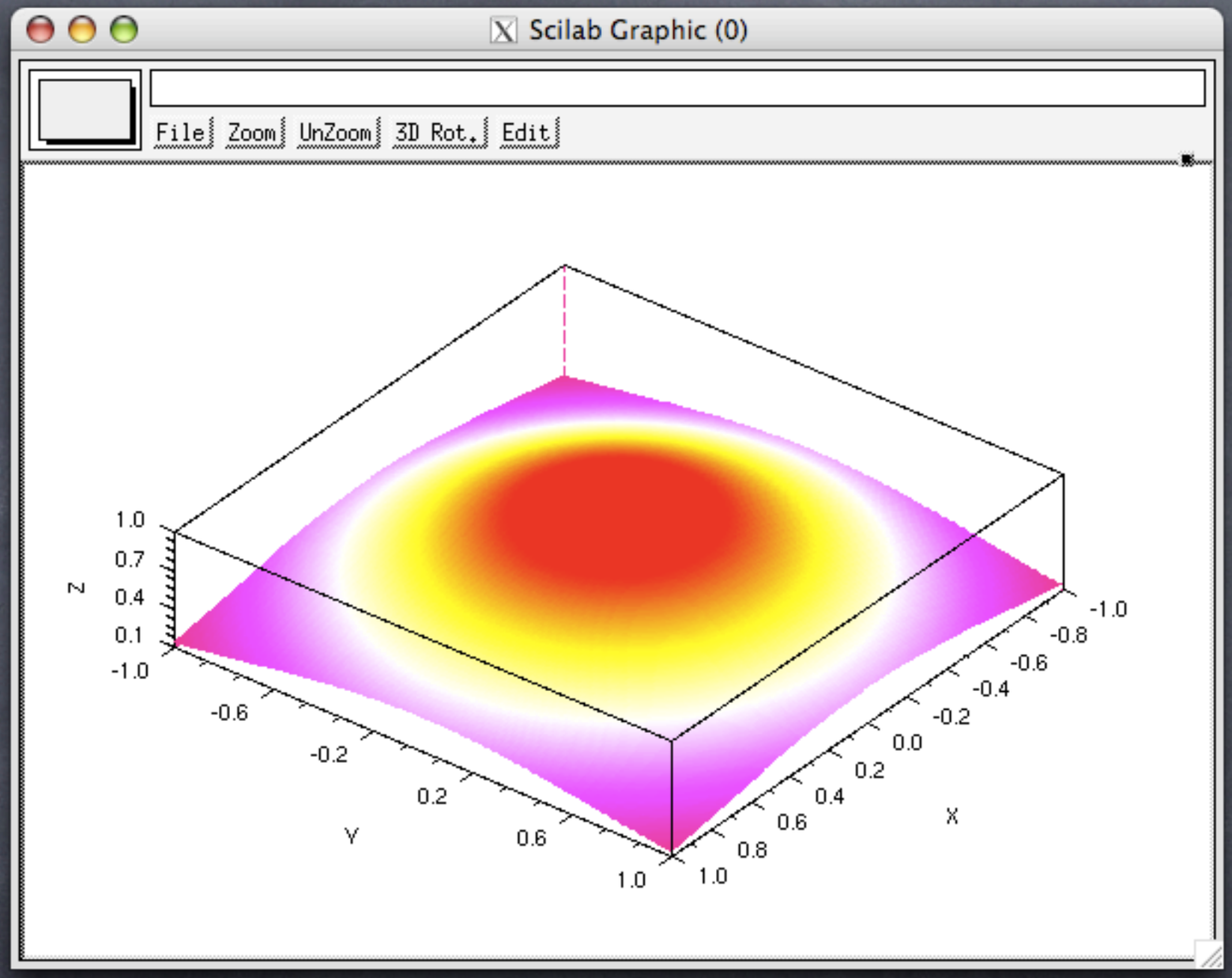
?


1.0
0.7
0.4
0.1
-1.0
Z
-0.6
-0.2
0.2
0.6
1.0
Y
-1.0
-0.6
-0.2
0.2
0.6
1.0
X
1
0.75
0.5
0.25
0


1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
Z
-1.0
-0.6
-0.2
0.2
0.6
1.0
Y
-1.0
-0.6
-0.2
0.2
0.6
1.0
X
1
0.75
0.5
0.25
0

Une autre carte obtenue
avec une modification
similaire - retrouvez la ...


Scilab Graphic (0)
File
Zoom
UnZoom
3D Rot.
Edit
Z
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
-1.0
-0.6
-0.2
0.2
0.6
1.0
Y
1.0
0.6
0.2
-0.2
-0.6
-1.0
X


Scilab Graphic (0)
File
Zoom
UnZoom
3D Rot.
Edit
Z
1.0
0.7
0.4
0.1
-1.0
Y
-0.6
-0.2
0.2
0.6
1.0
X
-1.0
-0.8
-0.6
-0.4
-0.2
0.0
0.2
0.4
0.6
0.8
1.0

FIN