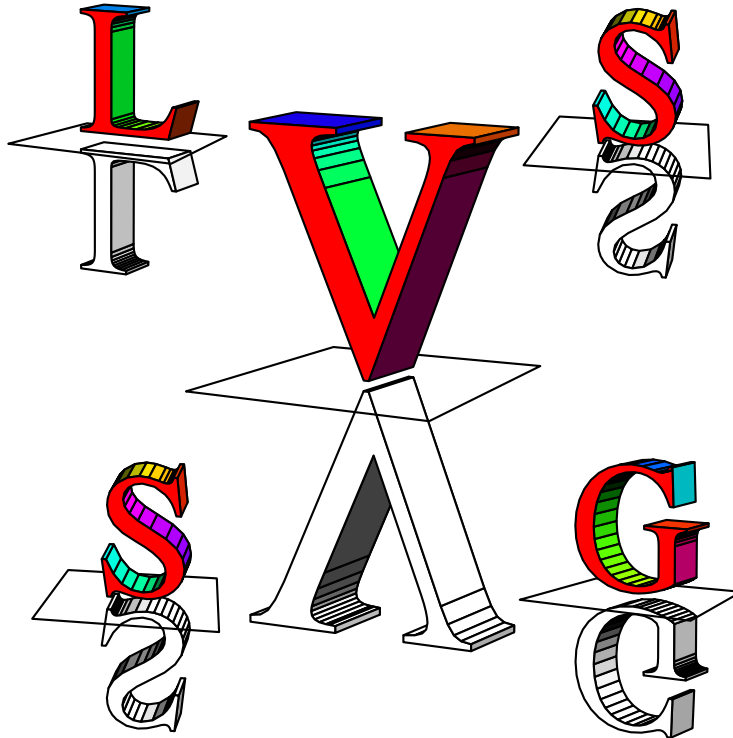


# pst-solides3d : Exemples d'utilisation

v. 3.0 (2007/12/21)



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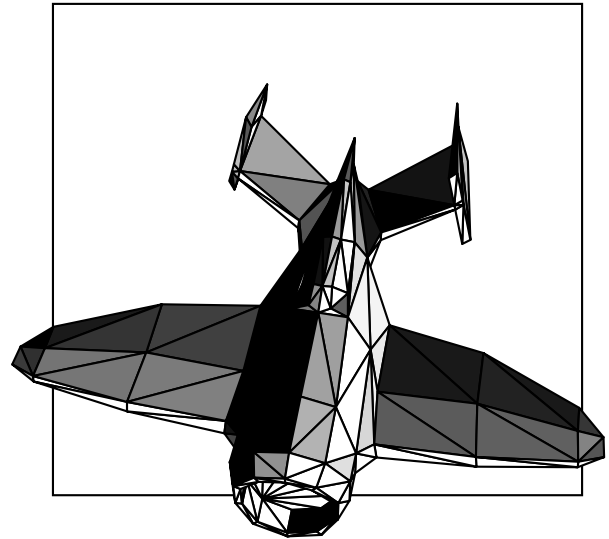
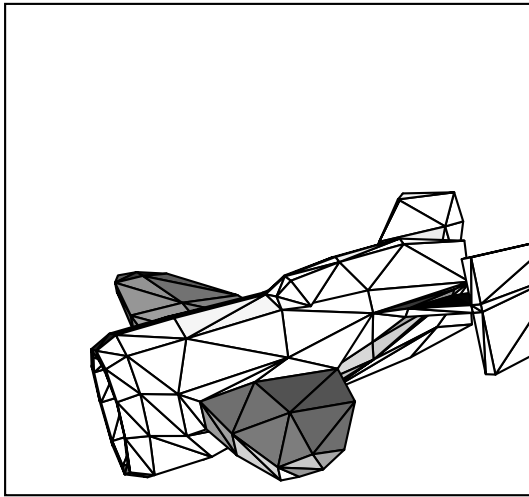
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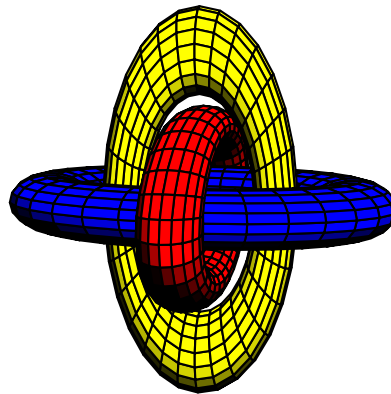
\* Avec la collaboration de : Jürgen GILG<gilg@acrotex.net>, Jean-Michel SARLAT<jm.sarlat@gmail.com>.

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# 1 Un avion

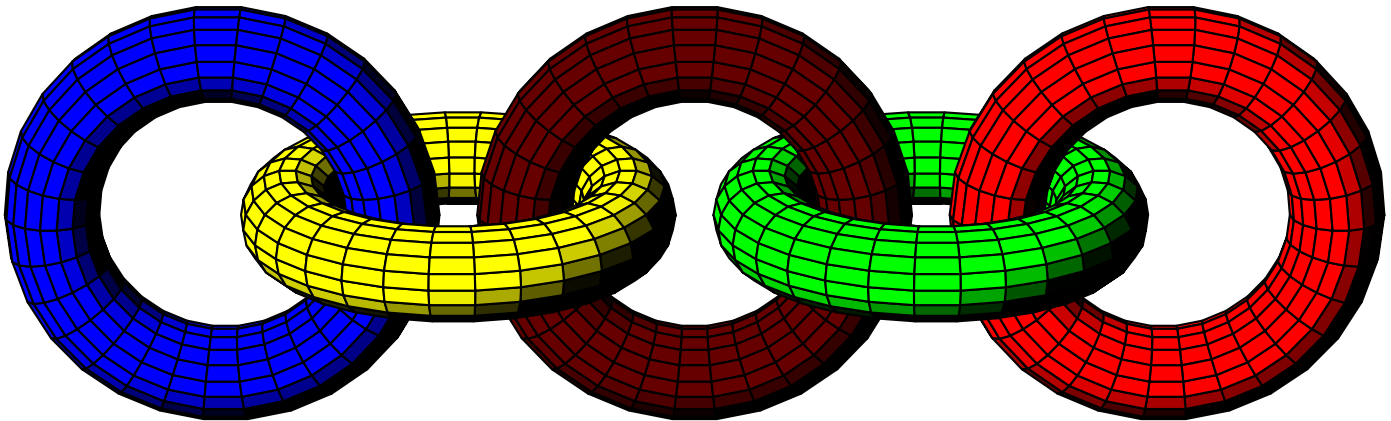


# 2 Anneaux De Borromée



```
1 \begin{pspicture}(-4,-6)(4,6)
2 \codejps{
3 /ORing1 {
4   0.25 0.9 [18 30] newtore
5   {0.75 1.5 1 scale0point3d} solidtransform
6   {0 0 0 rotate0point3d} solidtransform
7   dup (Blue) outputcolors} def
8 /ORing2 {
9   0.25 0.9 [18 30] newtore
10  {0.75 1.5 1 scale0point3d} solidtransform
11  {90 0 90 rotate0point3d} solidtransform
12  dup (Yellow) outputcolors} def
13 /ORing3 {
14  0.25 0.9 [18 30] newtore
15  {0.75 1.5 1 scale0point3d} solidtransform
16  {0 90 90 rotate0point3d} solidtransform
17  dup (Red) outputcolors} def
18 /un {ORing1 ORing2 solidfuz} def
19 /deux {ORing3 un solidfuz} def
20 deux drawsolid**}
21 \end{pspicture}
```

# 3 Chaîne olympique

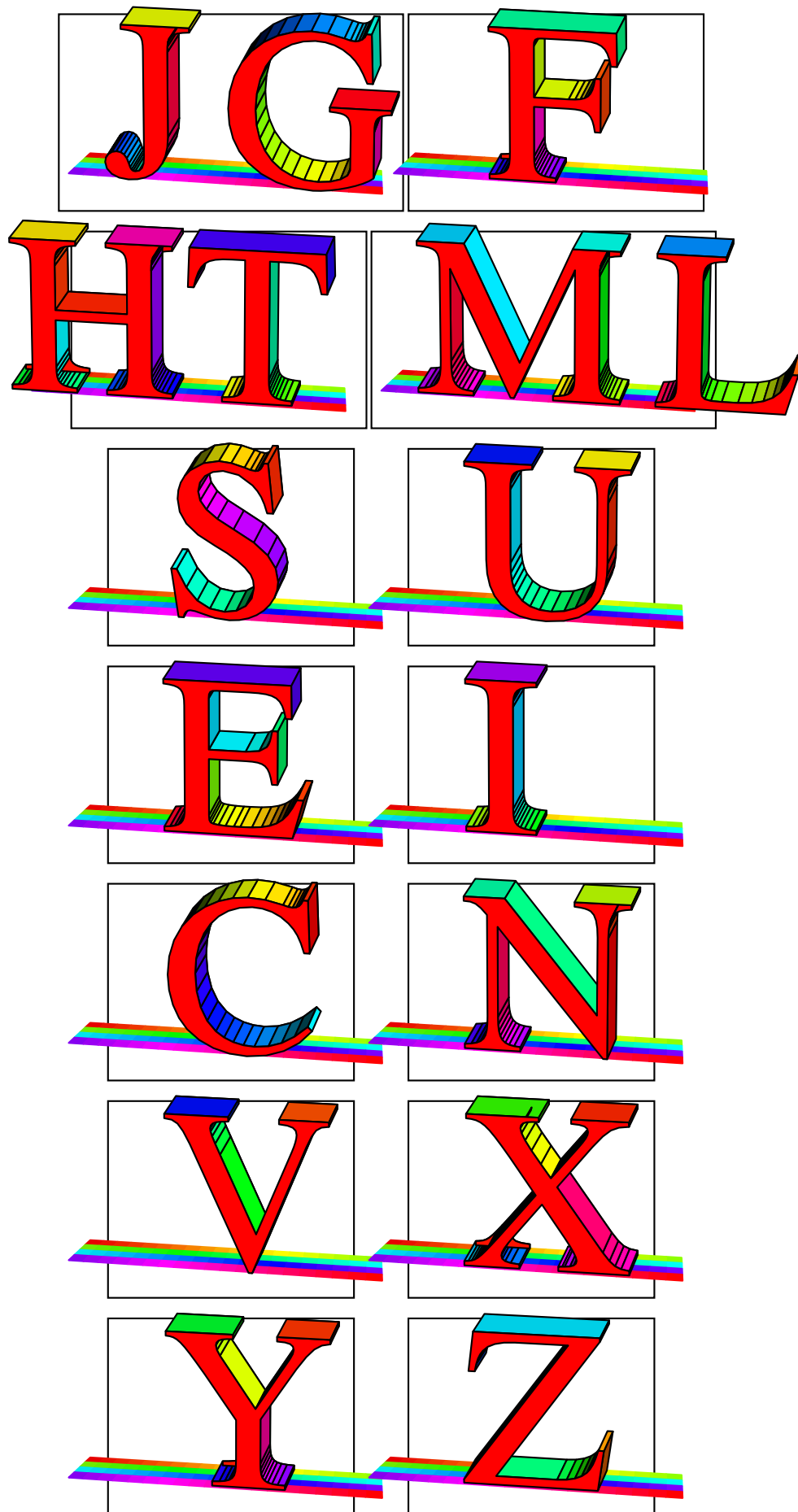


```

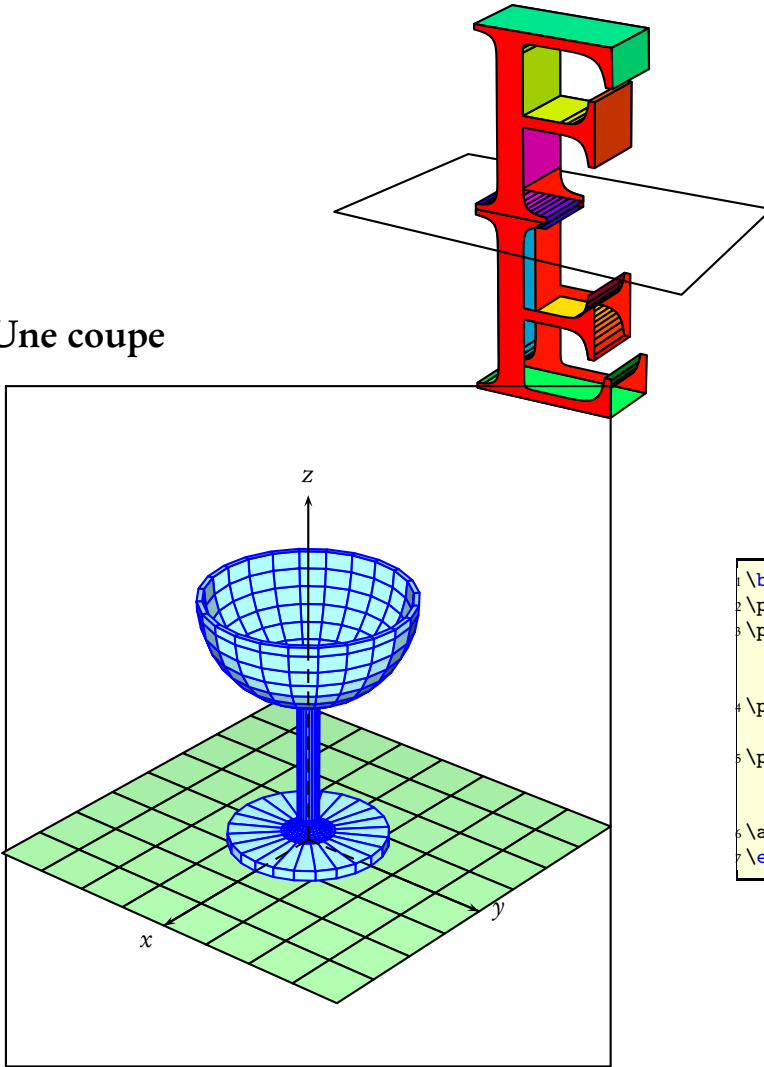
1 \begin{pspicture}(-6,-5)(6,6)
2 \psset{lightsrc=50 -50 50,viewpoint=40 0 20,SphericalCoord,Decran=100,ngrid=18 30,r0=0.25,r1=0.9}
3 \psSolid[object=tore,solidmemory=true,
4   RotY=90,
5   fillcolor=blue,
6   action=none,
7   name=anneau1](0,-2.5,0)
8 \psSolid[object=tore,solidmemory=true,
9   RotY=90,
10  fillcolor=Brown,
11  action=none,
12  name=anneau2](0,0,0)
13 \psSolid[object=tore,solidmemory=true,
14  RotY=90,
15  fillcolor=red,
16  action=none,
17  name=anneau3](0,2.5,0)
18 \psSolid[object=tore,solidmemory=true,
19  fillcolor=yellow,
20  action=none,
21  name=anneau4](0,-1.25,0)
22 \psSolid[object=tore,solidmemory=true,
23  fillcolor=green,
24  action=none,
25  name=anneau5](0,1.25,0)
26 \psSolid[object=fusion,
27  base=anneau1 anneau2 anneau3 anneau4 anneau5,
28  name=anneaux,
29  action=draw**]%
30 \composeSolid
31 \end{pspicture}

```

# 4 Un abécédaire



## 5 Une coupe

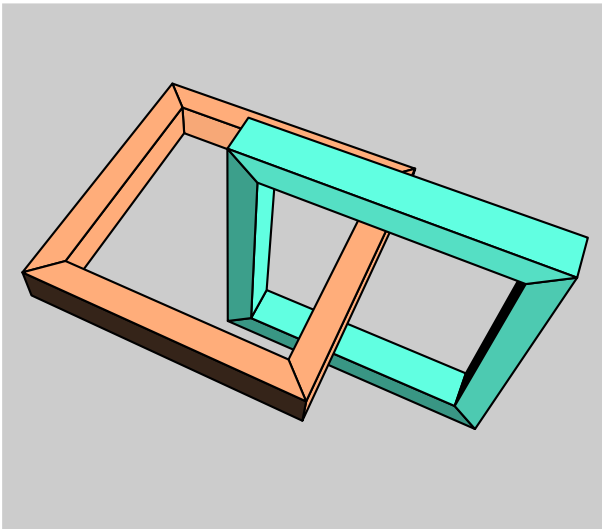


```

1 \begin{pspicture}(-4,-3)(4,6)
2 \psframe(-4,-3)(4,6)
3 \psset[pst-solides3d]{SphericalCoord,
4   viewpoint=70 40 30,Decran=50,lightsrc
5   =50 40 35}
6 \psSolid[object=grille,base=-4 4 -4 4,
7   fillcolor=green!30]%
8 \psSolid[object=anneau,section=\
9   SectionCoupe,fillcolor=cyan!30,
10  linecolor=blue]%
11 \axesIIID(1.5,1.5,4)(4,4,7)
12 \end{pspicture}

```

## 6 Anneaux carrés

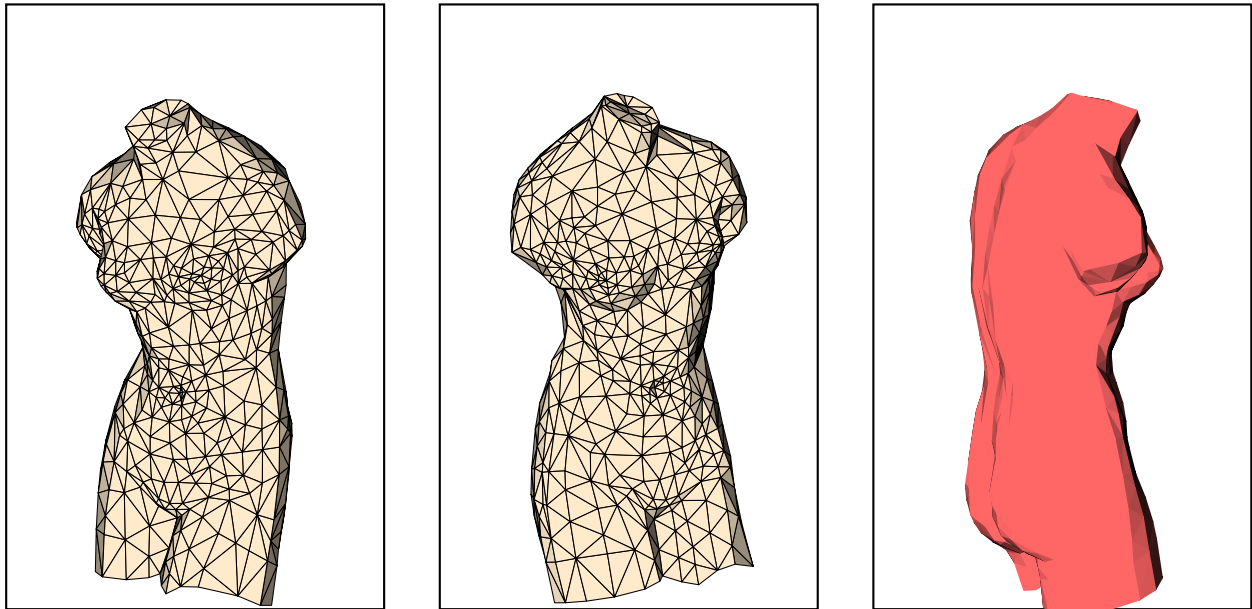


```

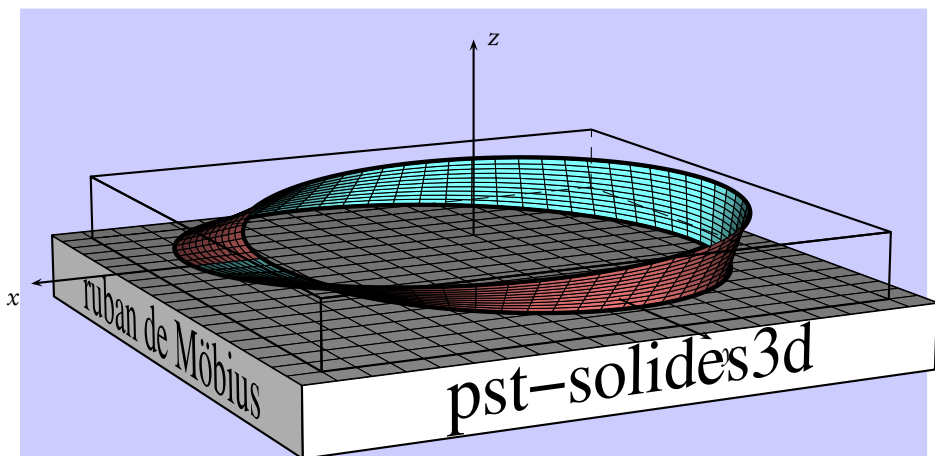
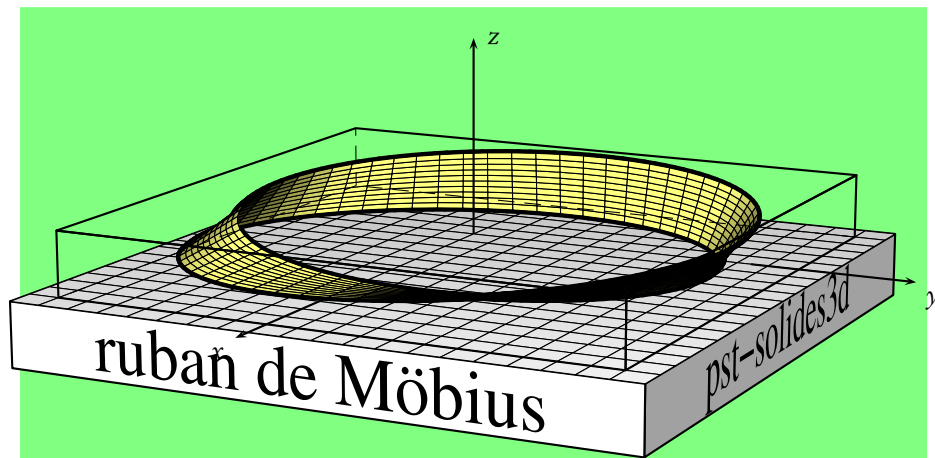
1 \psset{viewpoint=20 10 30,Decran=10,lightsrc=10 20 20}
2 \begin{pspicture}(-3,-4)(5,3)
3 \psframe*[linecolor=gray!40](-3,-4)(5,3)
4 \codejps{
5 /SquareRing {
6   [10 -1 10 1 8 1 8 -1] 4 newanneau
7   {0 0 45 rotate0point3d} solidtransform
8   } def
9 SquareRing dup (Apricot) outputcolors
10 SquareRing
11   {0 90 0 rotate0point3d} solidtransform
12   {0 7.5 0 translatepoint3d} solidtransform
13   dup (SkyBlue) outputcolors
14   solidfuz
15   drawsolid**}
16 \end{pspicture}

```

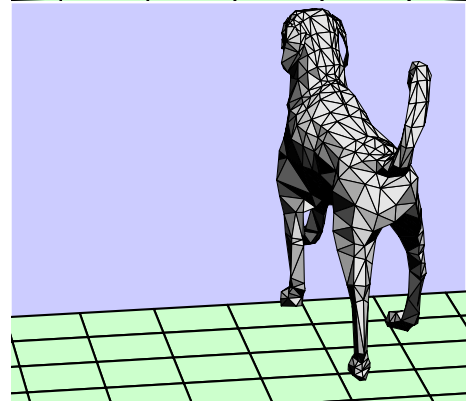
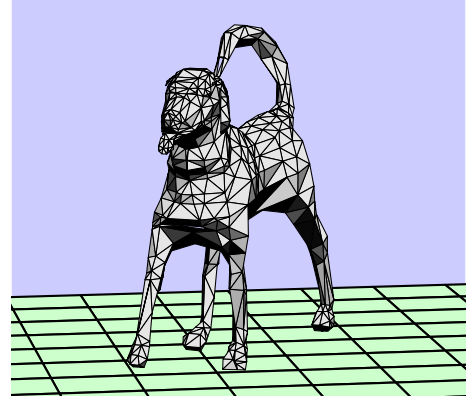
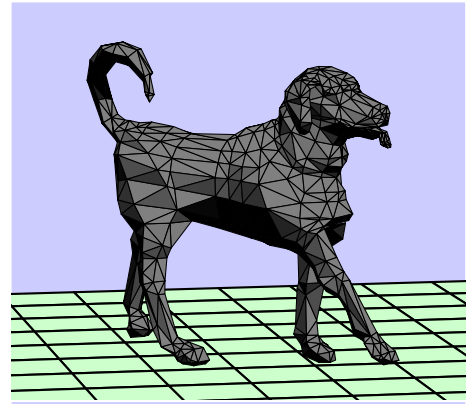
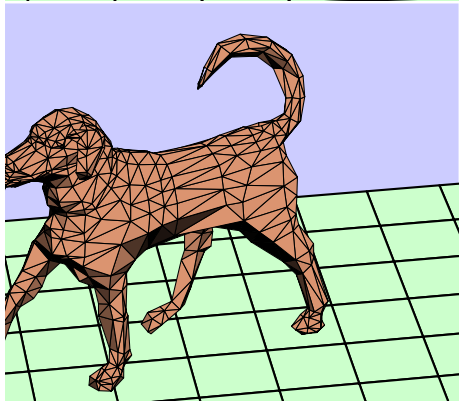
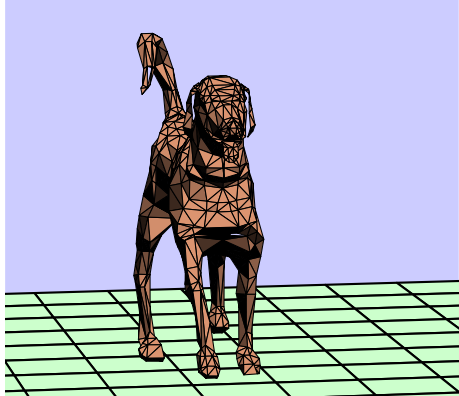
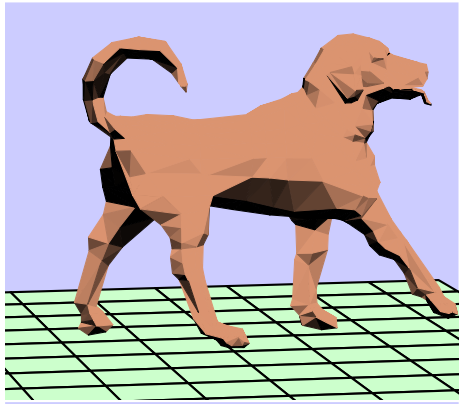
## 7 La vénus de Milo



## 8 Ruban de Möbius

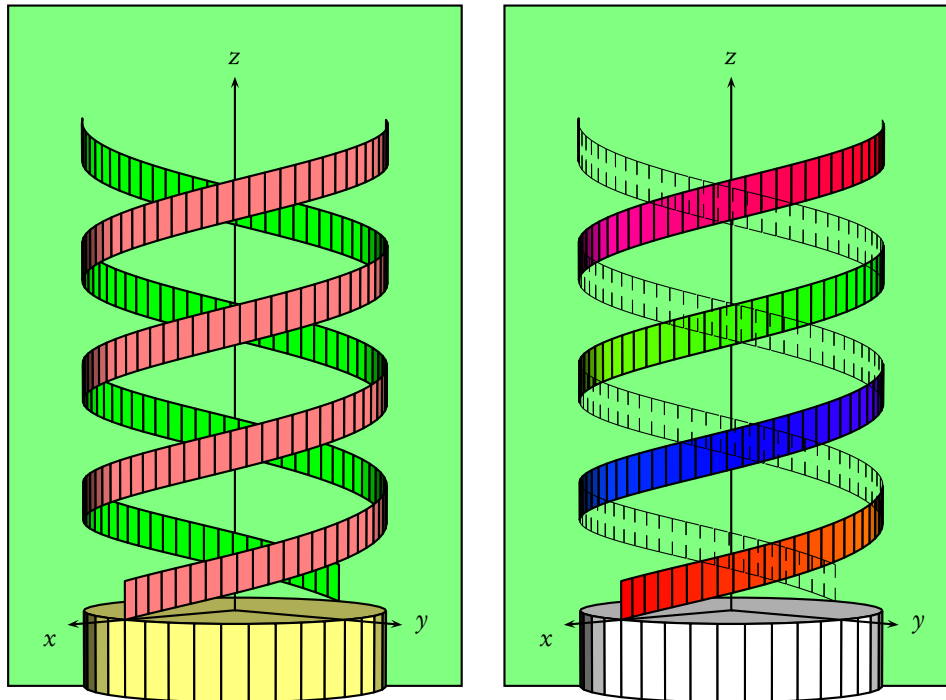


## 9 Labrador



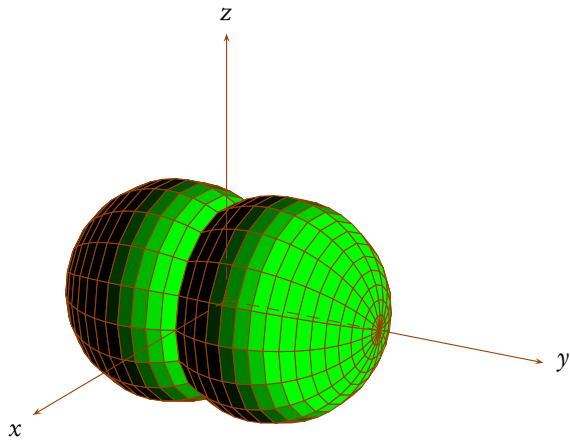


## 10 La double hélice de l'ADN



## 11 Modèles moléculaires compact et élaté

### 11.1 Cl<sub>2</sub> : modèle compact

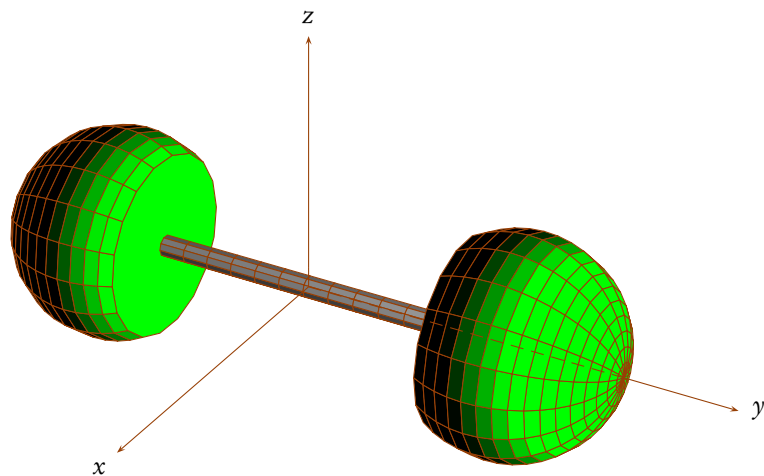


```

1 \begin{pspicture}(-4,-3)(4,5)
2 \psset{lightsrc=10 50 10,lightintensity=2,
3     viewpoint=100 30 20,Decran=30,SphericalCoor}
4 \psset{linecolor={[cmyk]{0 0.72 1 0.45}},
5     linewidth=0.5\pslinewidth}
6 \codejps{
7 % r phi theta [ngrid] newcalottesphere
8 /Chlore1 {
9 5 -30 90 [16 18] newcalottesphere
10 {90 0 0 rotate0point3d} solidtransform
11 {0 -2.5 0 translatepoint3d} solidtransform
12 dup videsolid
13 dup (Green) outputcolors
14 } def
15 /Chlore2 {
16 5 -30 90 [16 18] newcalottesphere
17 {-90 0 0 rotate0point3d} solidtransform
18 {0 2.5 0 translatepoint3d} solidtransform
19 dup (Green) outputcolors
20 } def
21 /dichlore{
22 Chlore1 Chlore2 solidfuz
23 } def
24 dichlore drawsolid**}
25 \axesIIIID(2.5,7.5,2.5)(15,15,12)
26 \end{pspicture}

```

## 11.2 Cl<sub>2</sub> : modèle éclaté

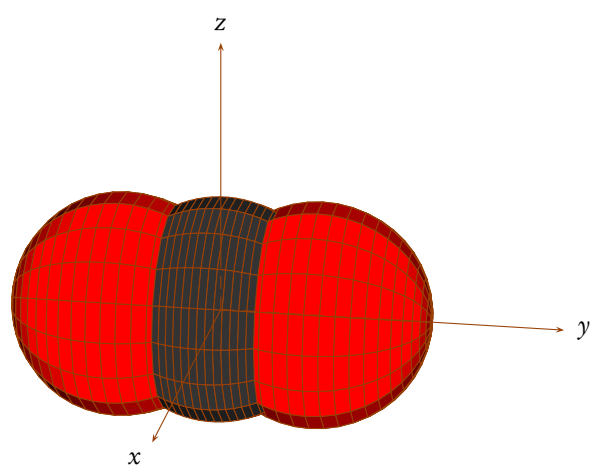


```

1 \begin{pspicture}(-5,-5)(5,5)
2 \psset{lightsrc=10 50 10,lightintensity=2,viewpoint=100 30 30,Decran=30,SphericalCoord}
3 \psset{linecolor={[cmymk]{0 0.72 1 0.45}},linewidth=0.5\pslinewidth}
4 \codejps{
5 /Chlore1 {5 -30 90 [16 18] newcalottesphere
6   {90 0 0 rotateOpoint3d} solidtransform
7   {0 -10 0 translatepoint3d} solidtransform
8   dup (Green) outputcolors } def
9 /Chlore2 {5 -30 90 [16 18] newcalottesphere
10  {-90 0 0 rotateOpoint3d} solidtransform
11  {0 10 0 translatepoint3d} solidtransform
12  dup (Green) outputcolors } def
13 /Liaison {
14   0 0.5 15 [12 10] newcylindre
15   {-90 0 0 rotateOpoint3d} solidtransform
16  {0 -7.5 0 translatepoint3d} solidtransform
17   dup (White) outputcolors
18  } def
19 /Cl2{Chlore1 Chlore2 solidfuz} def
20 /dichlore{Cl2 Liaison solidfuz} def
21  dichlore drawsolid**}
22 \axesIIID(1,15,1)(15,20,12)
23 \end{pspicture}

```

### 11.3 CO<sub>2</sub> : modèle compact

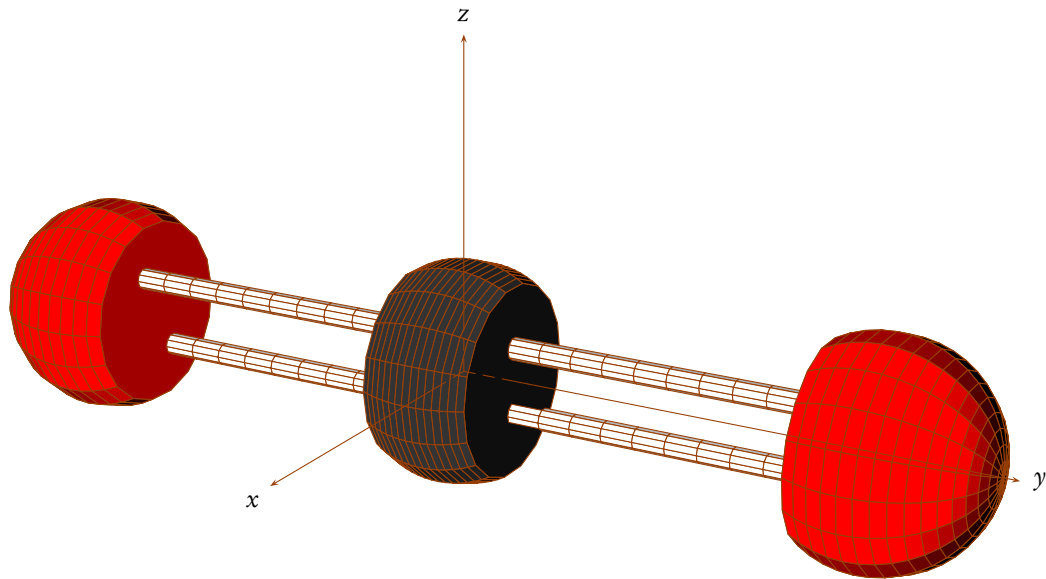


```

1 \begin{pspicture}(-4,-3)(4,3)
2 \pstVerb{/DarkGray {0.2 setgray} def}%
3 \psset{lightsrc=92 16 35,lightintensity=2,
4       viewpoint=100 10 20,Decran=30,SphericalCoor}
5 \psset{linecolor={[cmym]{0 0.72 1 0.45}},
6       linewidth=0.5\pslinewidth}
7 \codejps{
8 % r phi theta [ngrid] newcalottesphere
9 /Oxygen {
10 5 -30 90 [16 18] newcalottesphere
11 dup videsolid
12 dup (rouge) outputcolors
13 } def
14 /Carbon {
15 5 -30 30 [16 18] newcalottesphere
16 {90 0 0 rotate0point3d} solidtransform
17 dup (DarkGray) outputcolors
18 } def
19 /Oxygen1 {
20 Oxygen {90 0 0 rotate0point3d} solidtransform
21 {0 -4.33 0 translatepoint3d} solidtransform } def
22 /Oxygen2 {
23 Oxygen {-90 0 0 rotate0point3d} solidtransform
24 {0 4.33 0 translatepoint3d} solidtransform } def
25 /CO{Oxygen1 Carbon solidfuz} def
26 /CO2 {CO Oxygen2 solidfuz} def
27 CO2 drawsolid**}
28 \axesIIIID(2.5,7.5,2.5)(15,15,12)
29 \end{pspicture}

```

## 11.4 CO<sub>2</sub> : modèle éclaté

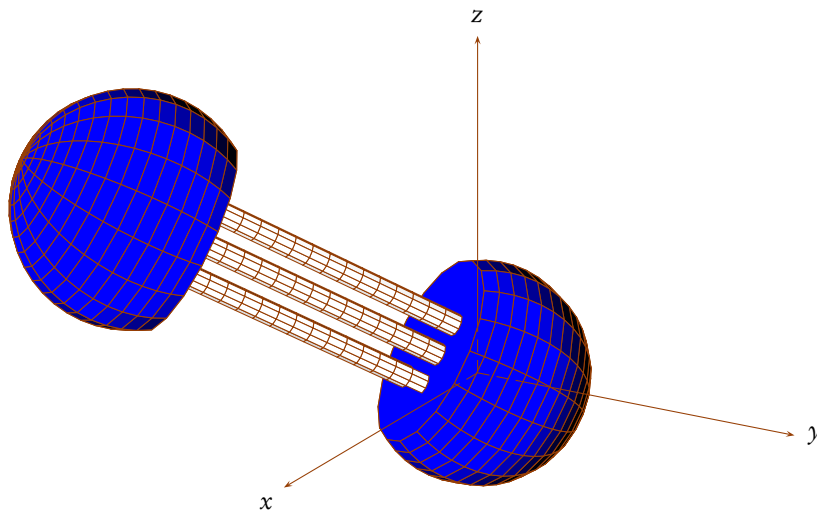


```

1 \begin{pspicture}(-7,-3)(7,6)
2 \pstVerb{/DarkGray {0.2 setgray} def}%
3 \psset{lightsrc=92 16 35,lightintensity=2,
4   viewpoint=100 30 20,Decran=30,SphericalCoor}
5 \psset{linecolor={[cmypk]{0 0.72 1 0.45}},
6   linewidth=0.5\pslinewidth}
7 \codejps{
8 % r phi theta [ngrid] newcalottesphere
9 /Oxygen {
10 5 -30 90 [16 18] newcalottesphere
11 dup videsolid
12 dup (rouge) outputcolors
13 } def
14 /Carbon {
15 5 -30 30 [16 18] newcalottesphere
16 {90 0 0 rotate0point3d} solidtransform
17 dup (DarkGray) outputcolors
18 } def
19 /Liaison {
20 0 0.5 15 [10 10] newcylindre
21 {-90 0 0 rotate0point3d} solidtransform
22 dup (White) outputcolors
23 } def
24 /L1 { Liaison {0 -17.5 1.5 translatepoint3d} solidtransform } def
25 /L2 { Liaison {0 -17.5 -1.5 translatepoint3d} solidtransform } def
26 /L3 { Liaison {0 2.5 1.5 translatepoint3d} solidtransform } def
27 /L4 { Liaison {0 2.5 -1.5 translatepoint3d} solidtransform } def
28 /Oxygen1 {Oxygen {90 0 0 rotate0point3d} solidtransform
29   {0 -19.33 0 translatepoint3d} solidtransform } def
30 /Oxygen2 {Oxygen {-90 0 0 rotate0point3d} solidtransform
31   {0 19.33 0 translatepoint3d} solidtransform } def
32 /Oxygen1L1 {Oxygen1 L1 solidfuz} def
33 /Oxygen1L12 {Oxygen1L1 L2 solidfuz} def
34 /CO1L12{Oxygen1L12 Carbon solidfuz} def
35 /Oxygen2L3 {Oxygen2 L3 solidfuz} def
36 /Oxygen2L34 {Oxygen2L3 L4 solidfuz} def
37 /CO2 {CO1L12 Oxygen2L34 solidfuz} def
38 CO2 drawsolid**}
39 %/L1234 {L12 L34 solidfuz} def
40 %L1234 drawsolid**}
41 \axesIIID(2.5,2.5,2.5)(15,25,15)
42 \end{pspicture}

```

## 11.5 Modèle éclaté du N<sub>2</sub>

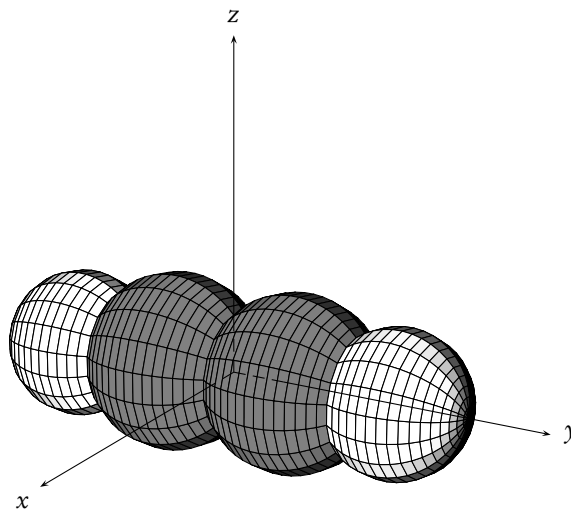


```

1 \begin{pspicture}(-7,-2)(7,5)
2 \psset{lightsrc=92 16 35,lightintensity=2,
3     viewpoint=100 30 20,Decran=30,SphericalCoor}
4 \psset{linecolor={cmyk}{0 0.72 1 0.45}},
5     linewidth=0.5\pslinewidth}
6 \codejps{
7 % r phi theta [ngrid] newcalottesphere
8 /Nitrogen {
9     5 -30 90 [16 18] newcalottesphere
10    {0 180 0 rotate0point3d} solidtransform
11    dup videsolid
12    dup (bleu) outputcolors
13    } def
14 /Liaison {
15     0 0.5 15 [18 10] newcylindre
16     dup (White) outputcolors
17     } def
18 /L1 {Liaison {0 -1.5 2 translatepoint3d} solidtransform } def
19 /L2 {Liaison {0 1.5 2 translatepoint3d} solidtransform } def
20 /L3 {Liaison {0 0 2 translatepoint3d} solidtransform } def
21 /NitrogenL1 {Nitrogen L1 solidfuz} def
22 /NitrogenL12 {NitrogenL1 L2 solidfuz} def
23 /NitrogenL123 {NitrogenL12 L3 solidfuz} def
24 /N2{NitrogenL123 Nitrogen {0 180 0 rotate0point3d} solidtransform {0 0 17 translatepoint3d} solidtransform
25     solidfuz} def
26 N2 {60 0 0 rotate0point3d} solidtransform {0 0 45 rotate0point3d} solidtransform drawsolid**}
27 \axesIIID(2.5,2.5,2.5)(15,15,15)
28 \end{pspicture}

```

## 11.6 Modèle compact de l'acétylène

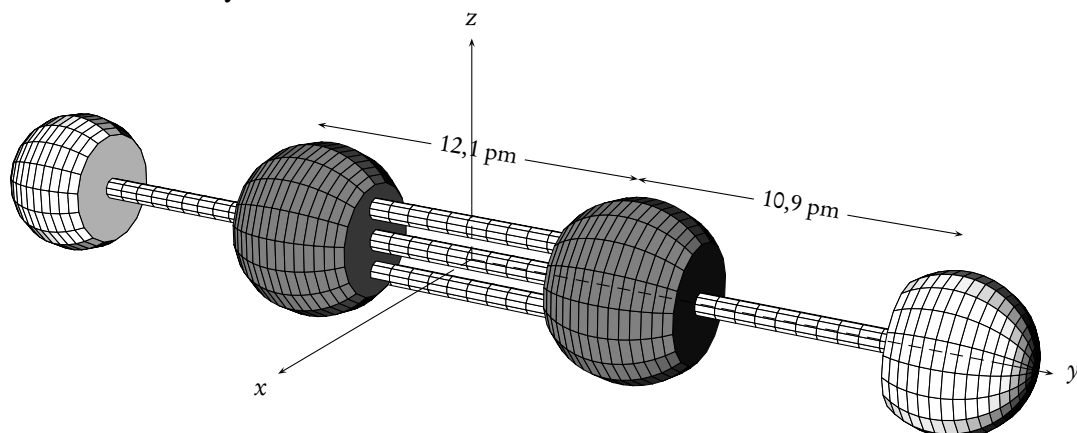


```

1 \begin{pspicture}(-7,-2)(7,5)
2 \psset{lightsrc=92 16 35,lightintensity=2,linewidth=0.5\pslinewidth,
3   viewpoint=100 30 20,Decran=30,SphericalCoord}
4 \pstVerb{/DarkGray {0.5 setgray} def}%
5 \codejps{
6 % r phi theta [ngrid] newcalottesphere
7 /Carbon {
8   4 -48.6 48.6 [16 18] newcalottesphere
9   {0 90 0 rotate0point3d} solidtransform
10  dup (DarkGray) outputcolors
11  } def
12 /Hydrogen {
13   3.317 -37.1 90 [16 18] newcalottesphere
14   dup videsolid
15   dup (White) outputcolors
16   } def
17 /C2H2 {Hydrogen {0 -90 0 rotate0point3d} solidtransform
18         {-8 0 0 translatepoint3d} solidtransform
19         Carbon {-3 0 0 translatepoint3d} solidtransform
20         solidfuz
21         Carbon {3 0 0 translatepoint3d} solidtransform
22         solidfuz
23         Hydrogen {0 90 0 rotate0point3d} solidtransform
24         {8 0 0 translatepoint3d} solidtransform
25         solidfuz} def
26 C2H2 {0 0 90 rotate0point3d} solidtransform drawsolid**}
27 \axesIIIID(2.5,2.5,2.5)(15,15,15)
28 \end{pspicture}

```

## 11.7 Modèle éclaté de l'acétylène

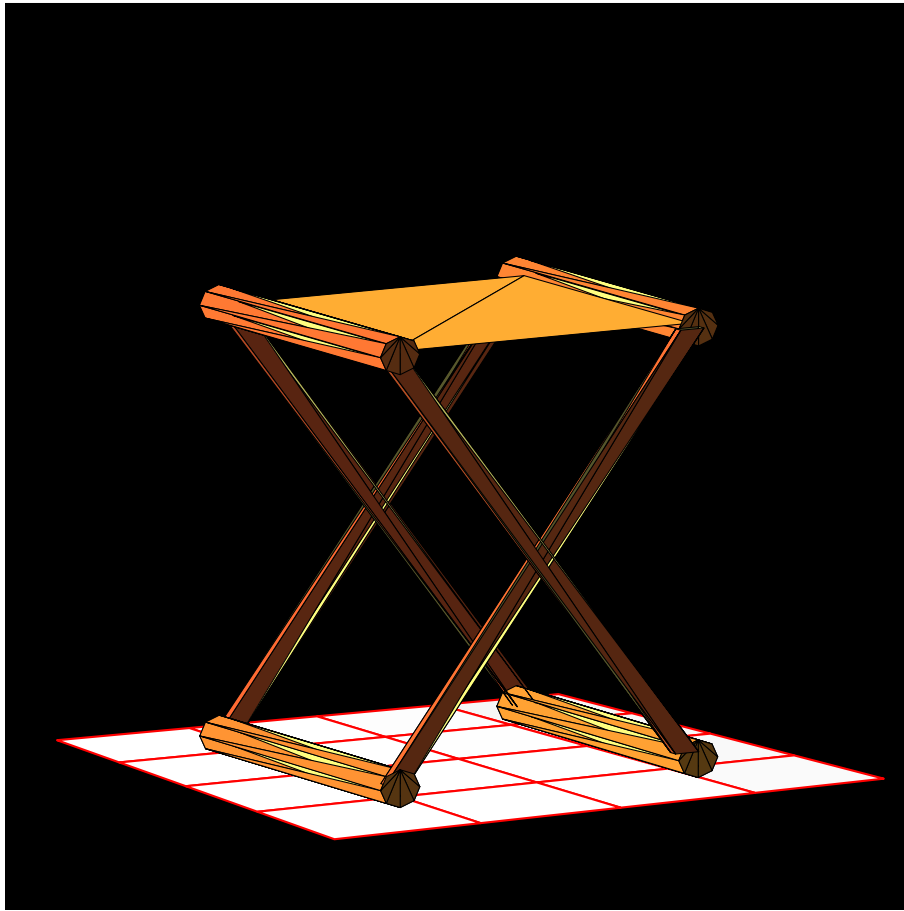


```

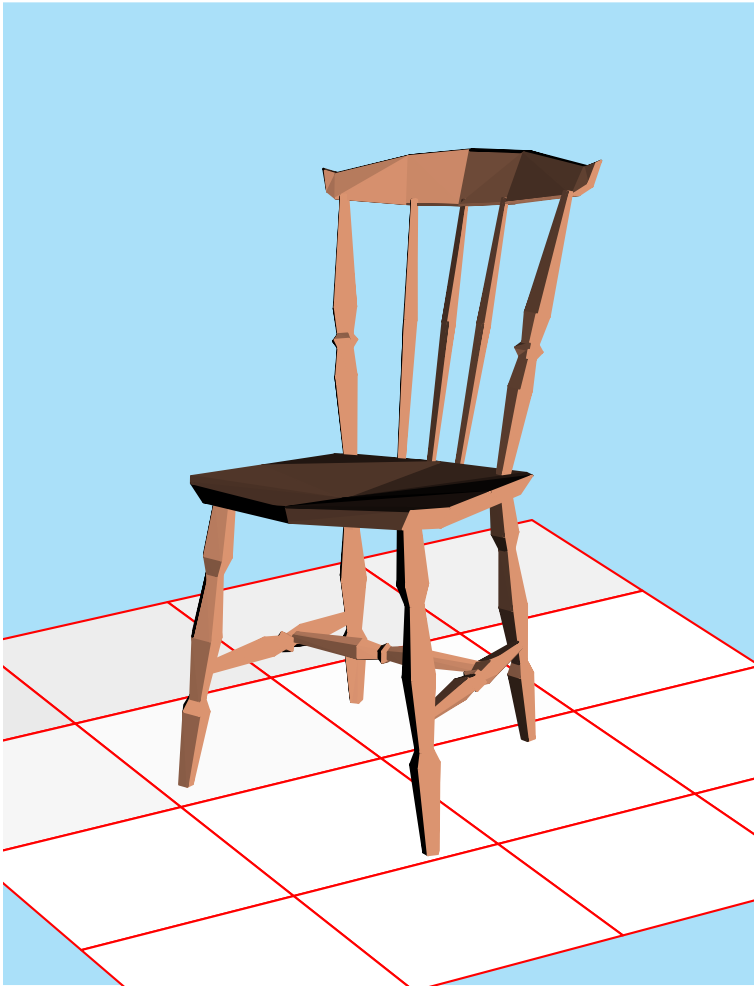
1 \begin{pspicture}(-7,-2.5)(7,3)
2 \psset{lightsrc=92 16 35,lightintensity=2,linewidth=0.5\pslinewidth,
3   viewpoint=100 30 20,Decran=30,SphericalCoor}
4 \pstVerb{/DarkGray {0.5 setgray} def}%
5 \codejps{
6 /Carbon {
7   4 -48.6 48.6 [16 18] newcalottesphere
8   {0 90 0 rotate0point3d} solidtransform
9   dup (DarkGray) outputcolors
10  } def
11 /Hydrogen {
12   3.317 -37.1 90 [16 18] newcalottesphere
13   dup videsolid dup (White) outputcolors
14   } def
15 /LiaisonCH {
16   0 0.5 9 [10 10] newcylindre
17   dup (White) outputcolors
18   } def
19 /LiaisonCC {
20   0 0.5 10 [10 10] newcylindre
21   dup (White) outputcolors
22   } def
23 /C2H2 {Carbon {-8 0 0 translatepoint3d} solidtransform
24   Carbon {8 0 0 translatepoint3d} solidtransform
25   solidfuz
26   LiaisonCC {0 -90 0 rotate0point3d} solidtransform
27     {5 0 0 translatepoint3d} solidtransform
28   solidfuz
29   LiaisonCC {0 -90 0 rotate0point3d} solidtransform
30     {5 0 1.5 translatepoint3d} solidtransform
31   solidfuz
32   LiaisonCC {0 -90 0 rotate0point3d} solidtransform
33     {5 0 -1.5 translatepoint3d} solidtransform
34   solidfuz
35   LiaisonCH {0 -90 0 rotate0point3d} solidtransform
36     {-11 0 0 translatepoint3d} solidtransform
37   solidfuz
38   Hydrogen {0 90 0 rotate0point3d} solidtransform
39     {22 0 0 translatepoint3d} solidtransform
40   solidfuz
41   LiaisonCH {0 90 0 rotate0point3d} solidtransform
42     {11 0 0 translatepoint3d} solidtransform
43   solidfuz
44   Hydrogen {0 -90 0 rotate0point3d} solidtransform
45     {-22 0 0 translatepoint3d} solidtransform
46   solidfuz } def
47 C2H2 {0 0 90 rotate0point3d} solidtransform drawsolid**}
48 \psPoint(0,8,5){C2}\psPoint(0,22,5){H2}
49 \psPoint(0,-8,5){C1}\pcline{<->}(C1)(C2)
50 \lput*{:U}{\small 12,1 pm}
51 \pcline{<->}(C2)(H2)\lput*{:U}{\small 10,9 pm}
52 \axesIIID(2.5,24,2.5)(15,26,10)
53 \end{pspicture}

```

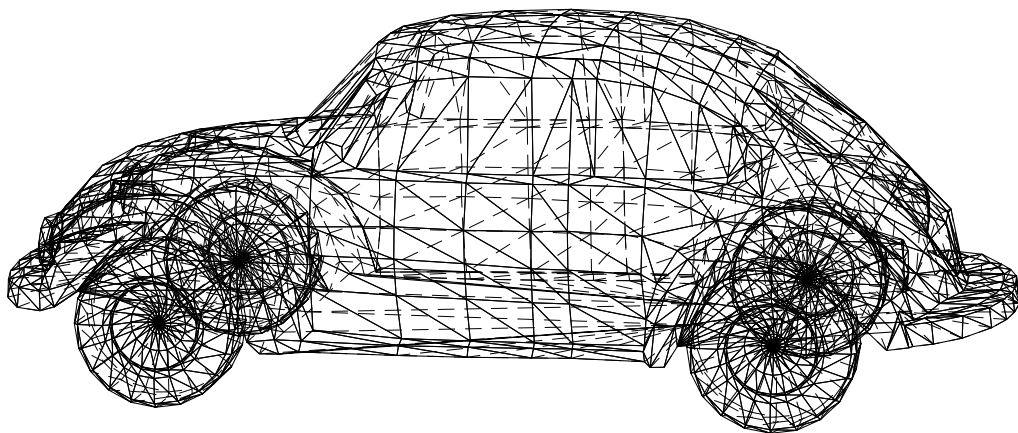




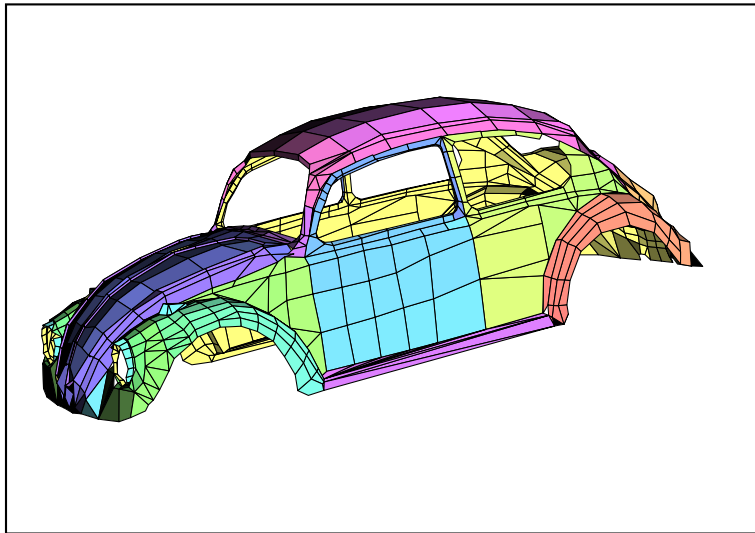
13 Une chaise



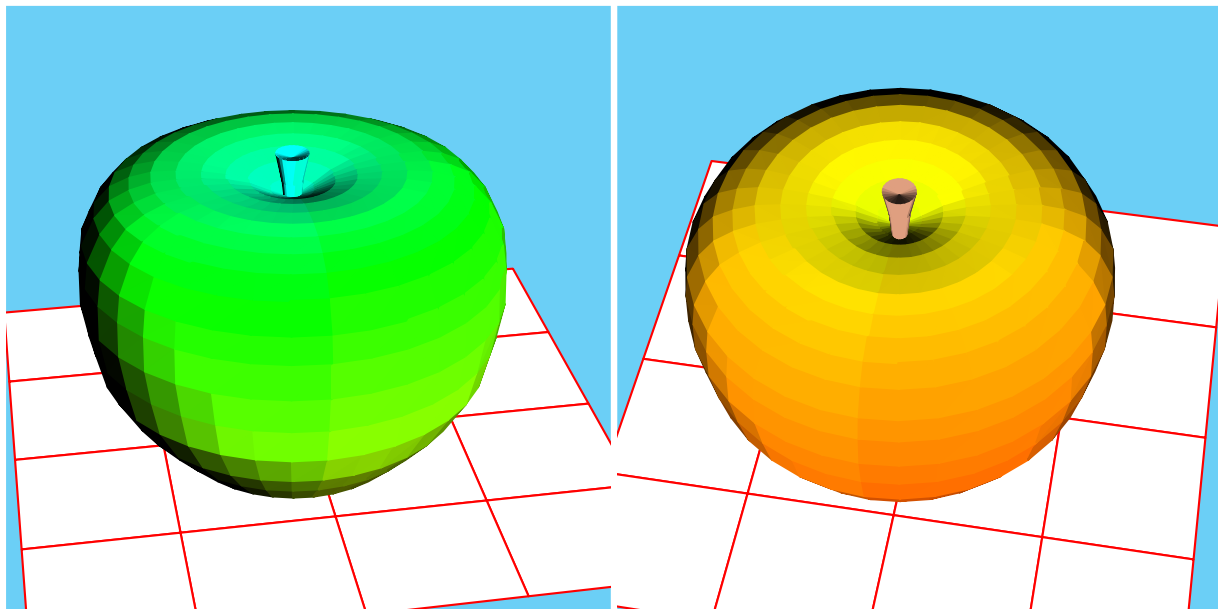
14 Une coccinelle VW

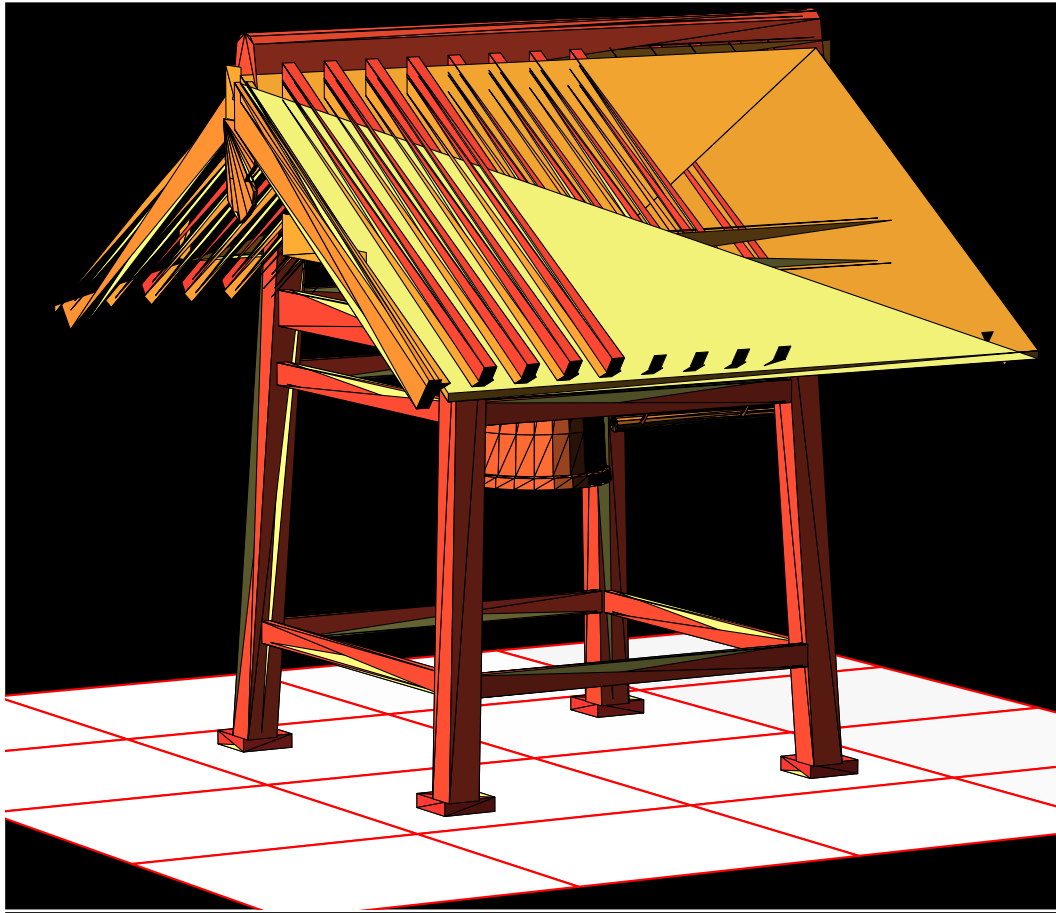


15 Une VW multicolore

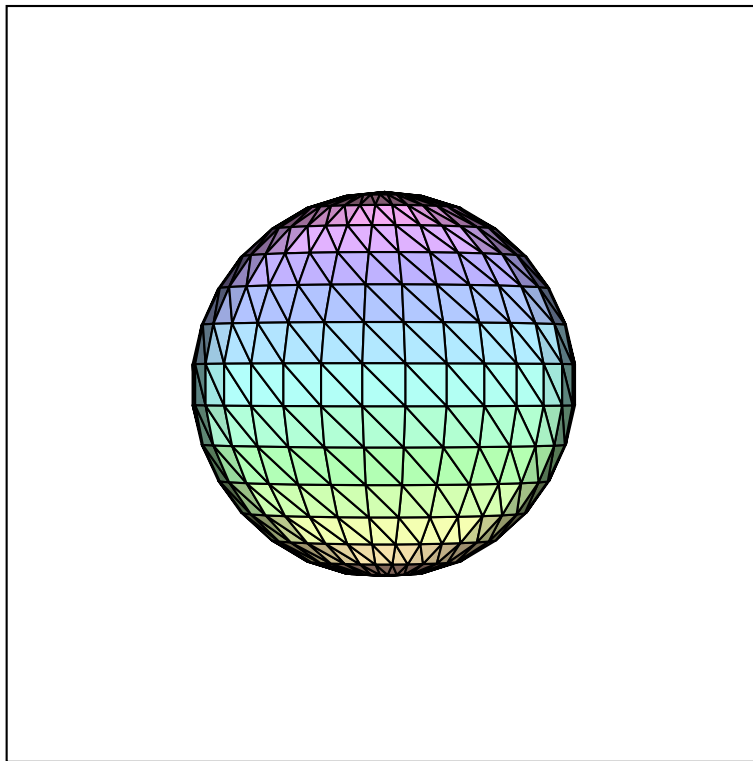


16 Une pomme

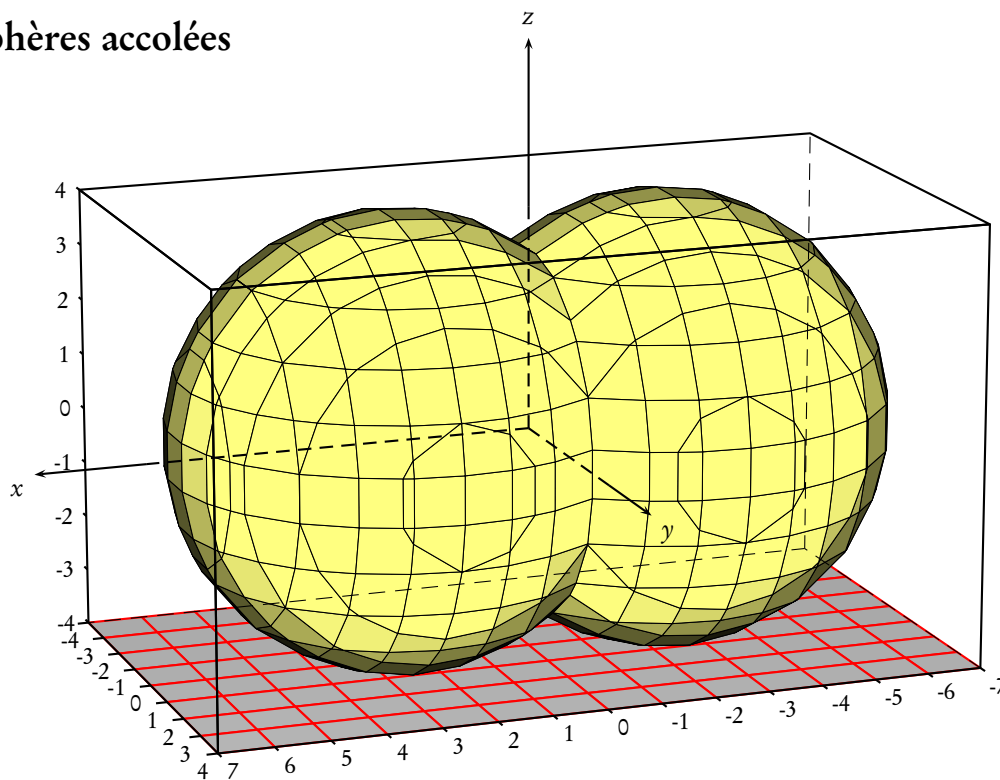




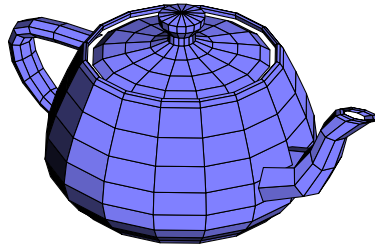
## 18 Une sphère



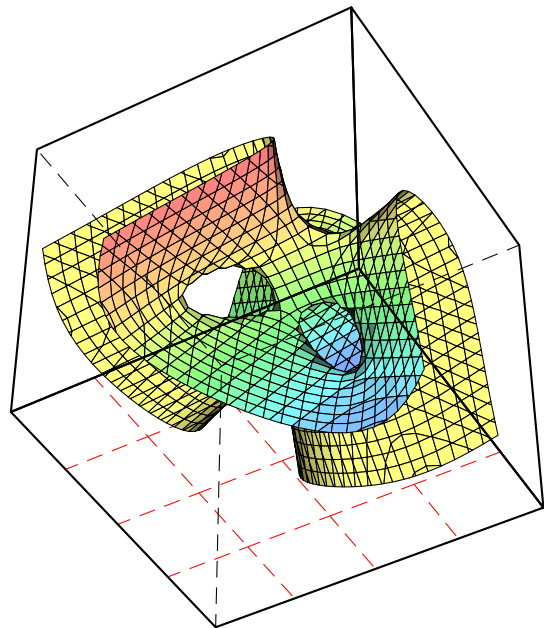
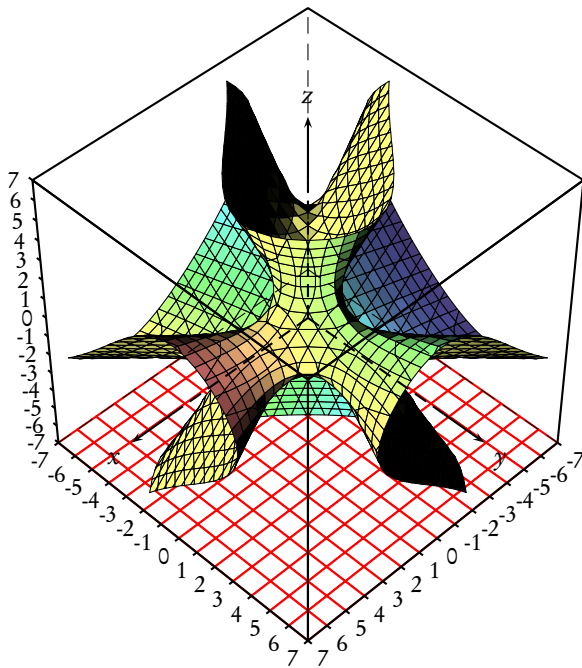
## 19 Sphères accolées



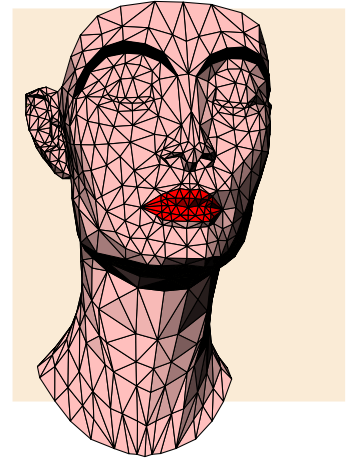
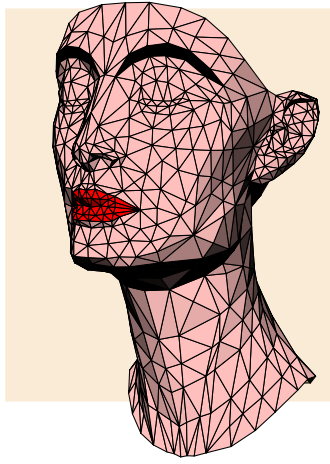
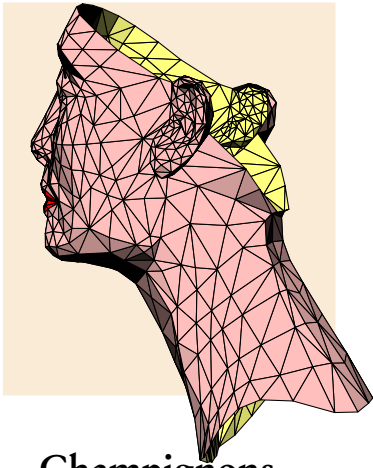
## 20 Une théière



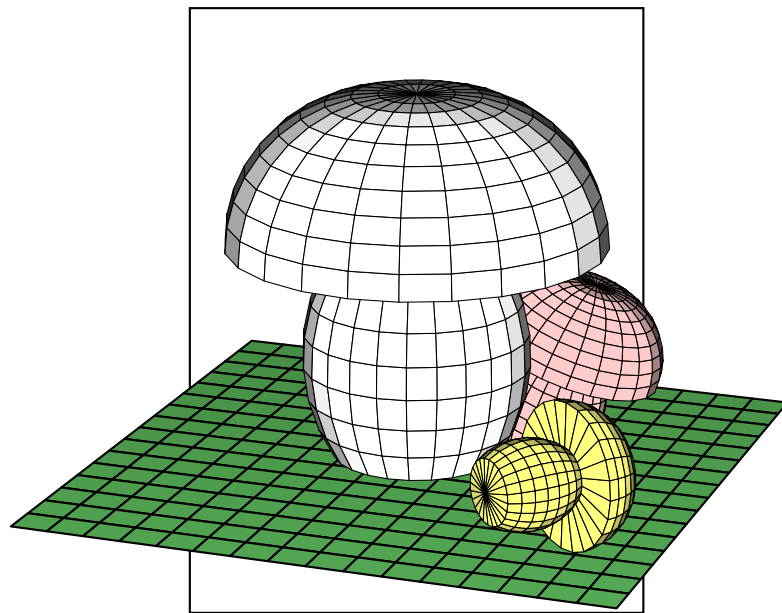
## 21 Surface de Clebsch



22 Nefertiti



23 Champignons



```

1 \newcommand\SectionChampignon{
2 /r3 0.2 R mul def
3 0 0 %1
4 % 0 r1 0 % 2
5 -33 10 43 { /Angle ED
6   Angle cos 0.5 h mul mul 0.2 h mul sub
7   Angle sin 0.5 h mul mul 0.3 h mul add
8   } for
9 0 10 90 {
10 /Angle ED
11 0.8 R mul Angle cos mul r3 add 0.8 R mul Angle sin mul 0.6 h mul add
12 } for
13 0 h
14 }
15 \begin{pspicture}(-3,-6)(3,6)
16 \psframe(-3,-2)(3,6)
17 \pssset[pst-solides3d]{SphericalCoor=true,viewpoint=100 20 20,Decran=50,lightsrc=90 30 30}
18 \psSolid[object=grille,base=-8 8 -8 8,action=draw**,fillcolor=green!50]%
19 \psSolid[object=anneau,section=\SectionChampignon,fillcolor=red!20,h=10,R=5,r=0,unit=0.5,RotX=-20,linewidth
20 =0.5\pslinewidth](-4,5,0)
21 \psSolid[object=anneau,section=\SectionChampignon,fillcolor=white,h=10,R=5,r=0,linewidth=0.5\pslinewidth]%
22 \psSolid[object=anneau,section=\SectionChampignon,fillcolor=yellow!50,h=10,R=5,r=0,unit=0.4,RotY=-90,RotZ=-40,
23 linewidth=0.5\pslinewidth](4,6,0)
24 \end{pspicture}

```



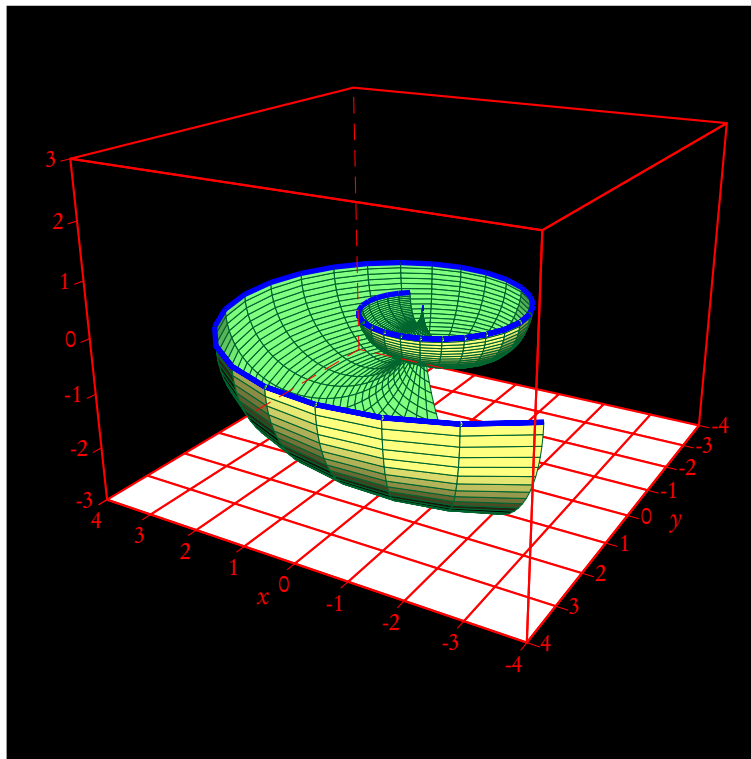


```

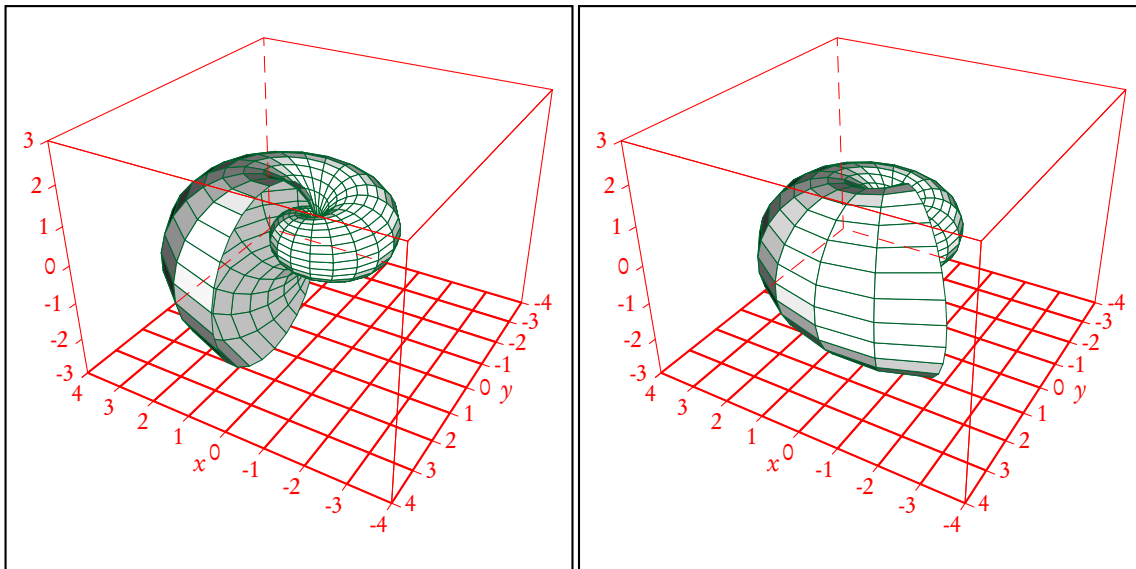
1 \newcommand\SectionAmanite{
2 /radius1 h 8 div 1.52 mul def
3 /xC1 h 8 div 0.25 mul def
4 /yC1 h 8 div 1.5 mul def
5 /radius2 h 8 div 4.5 mul dup mul h 8 div 2 mul dup mul add sqrt 4 div 4.5 mul def
6 /xC2 0 def
7 /yC2 h 8 div 2.46 mul def
8 -110 10 70 { /Angle ED
9     Angle cos radius1 mul xC1 add
10    Angle sin radius1 mul yC1 add
11    } for
12 h 8 div 0.5 mul h 8 div 6 mul
13 40 10 90 {/Angle ED
14    Angle cos radius2 mul xC2 add
15    Angle sin radius2 mul yC2 add
16    } for
17 0 h
18 }
19 \begin{pspicture}(-3,-6)(3,6)
20 \psframe*(-3,-2)(3,6)
21 \psset[pst-solides3d]{SphericalCoor,viewpoint=100 20 20,Decran=50,lightsrc=90 30 30}
22 \psSolid[object=grille,base=-8 8 -8 8,action=draw**,hue=0.2 0.5 0.5 1,grid](0,0,0)
23 \psSolid[object=anneau,section=\SectionAmanite,h=8,R=5,r=0,hue=0 1 0.5 1,unit=0.5,grid,RotX=-20](-4,5,0)
24 \psSolid[object=anneau,section=\SectionAmanite,h=8,R=5,r=0,hue=0 1 0.5 1,grid](0,0,0)
25 \psSolid[object=anneau,section=\SectionAmanite,h=8,R=5,r=0,hue=0 1 0.5 1,grid,unit=0.4,RotY=-90,RotZ
    =-50](4,6,0)
26 \end{pspicture}

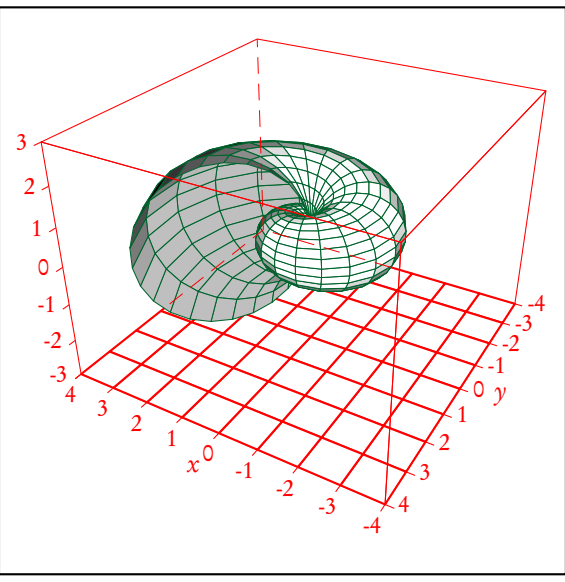
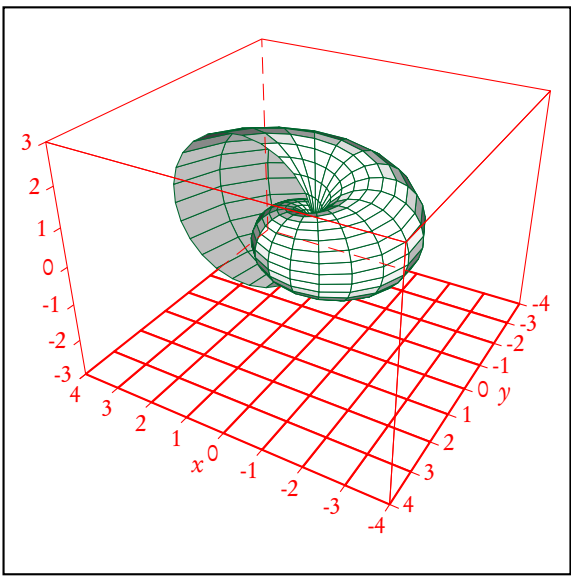
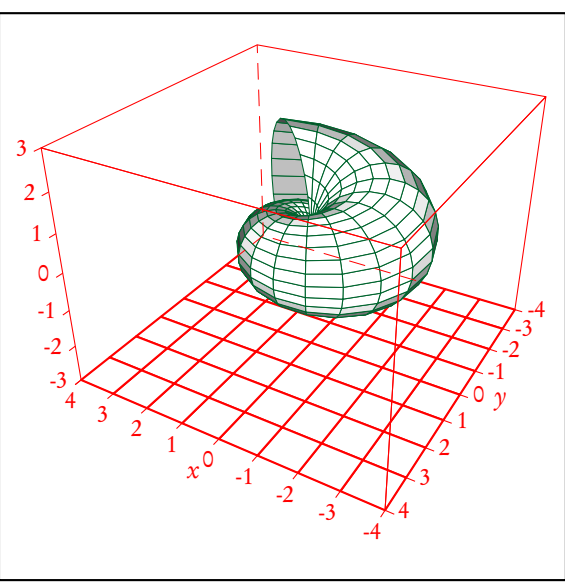
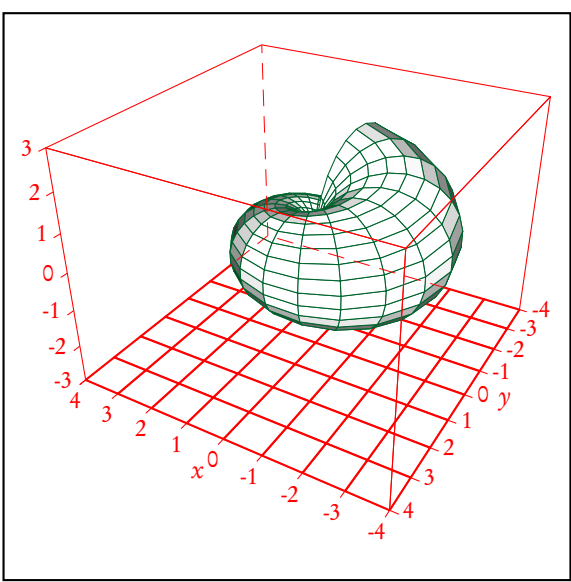
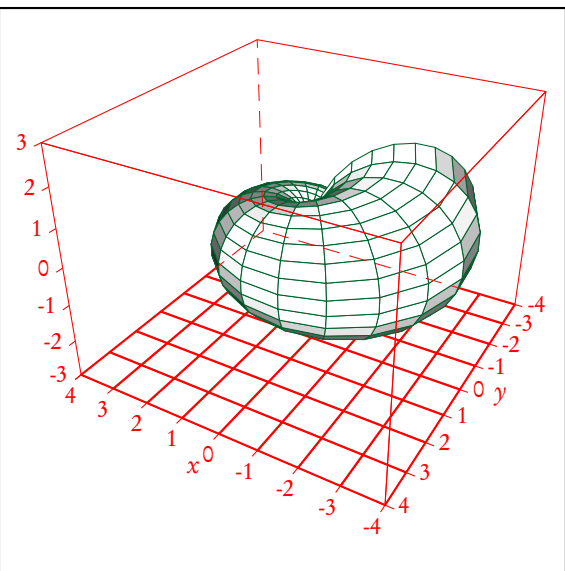
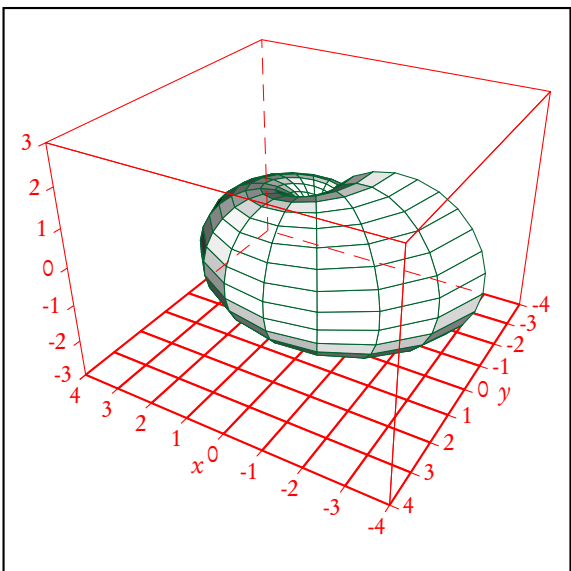
```

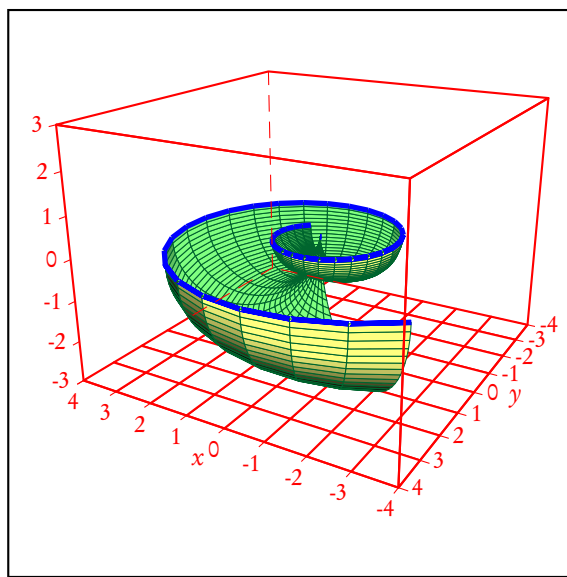
## 24 Un demi-coquillage



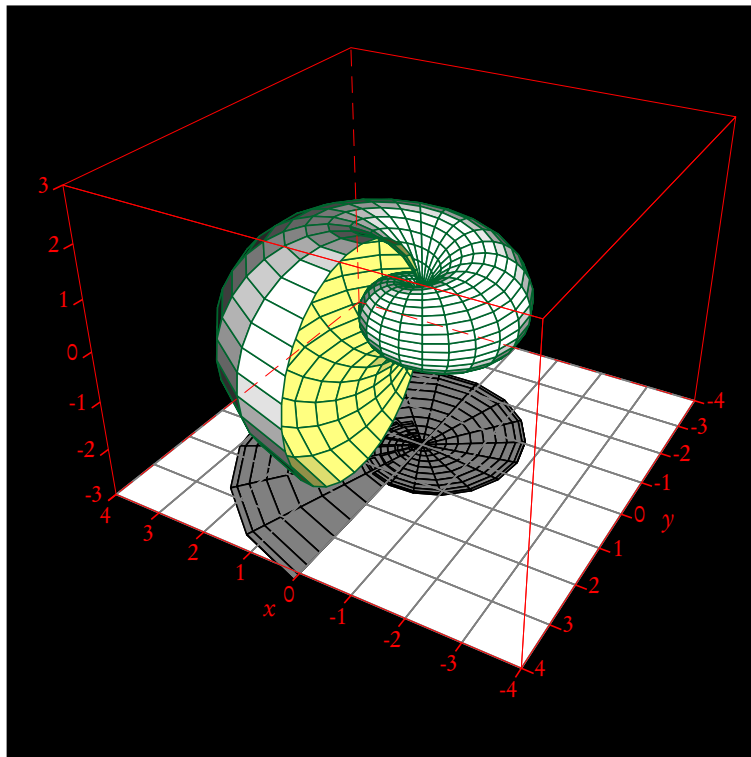
## 25 Un coquillage qui tourne



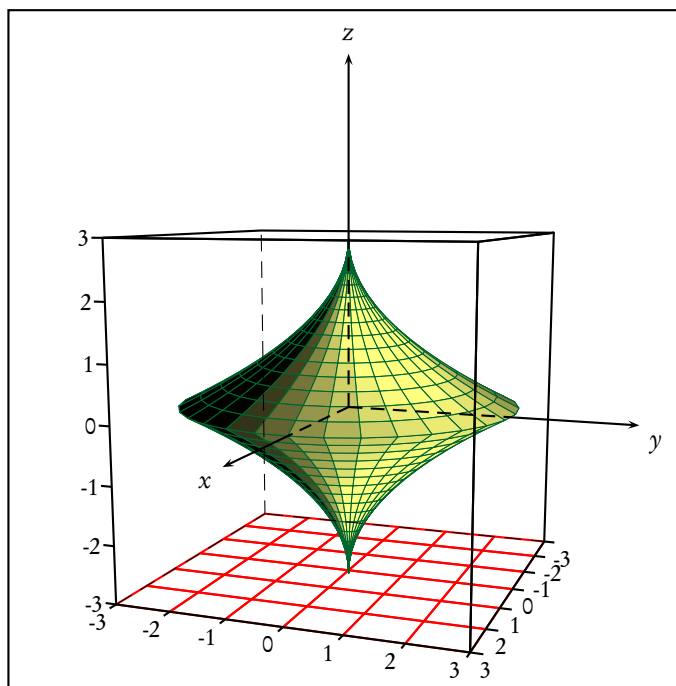




## 26 Un coquillage et son ombre



## 27 Une toupie

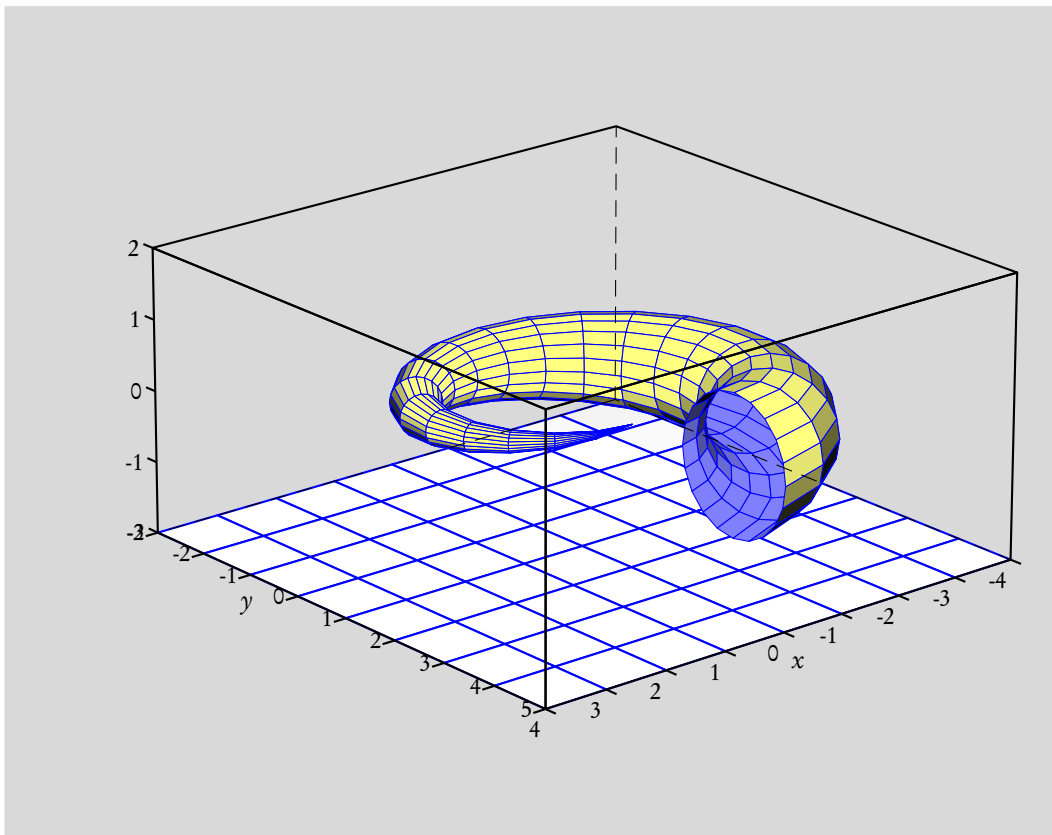


```

1 \psset{unit=0.75}
2 \begin{pspicture}(-6,-5)(6,7)
3 \psframe(-6,-5)(6,7)
4 \psset[pst-solides3d]{viewpoint=20 20 10,SphericalCoord,Decran=20,lightsrc=10 15 0}
5 % Parametric Surfaces
6 \psSolid[object=grille,base=-3 3 -3 3,action=draw,linecolor=red](0,0,-3)
7 \defFunction[algebraic]{toupie}(u,v){(abs(u)-1)^2 * cos(v)}{(abs(u)-1)^2 * sin(v)}{u}
8 \psSolid[object=surfaceparametree,linecolor={[cmyk]{1,0,1,0.5}},
9   base=1 -1 0 2 pi mul,incolor=green!50,fillcolor=yellow!50,
10  function=toupie,linewidth=0.5\pslinewidth,unit=3,
11  ngrid=30]%
12 \gridIIID[Zmin=-3,Zmax=3](-3,3)(-3,3)
13 \end{pspicture}

```

## 28 Corne

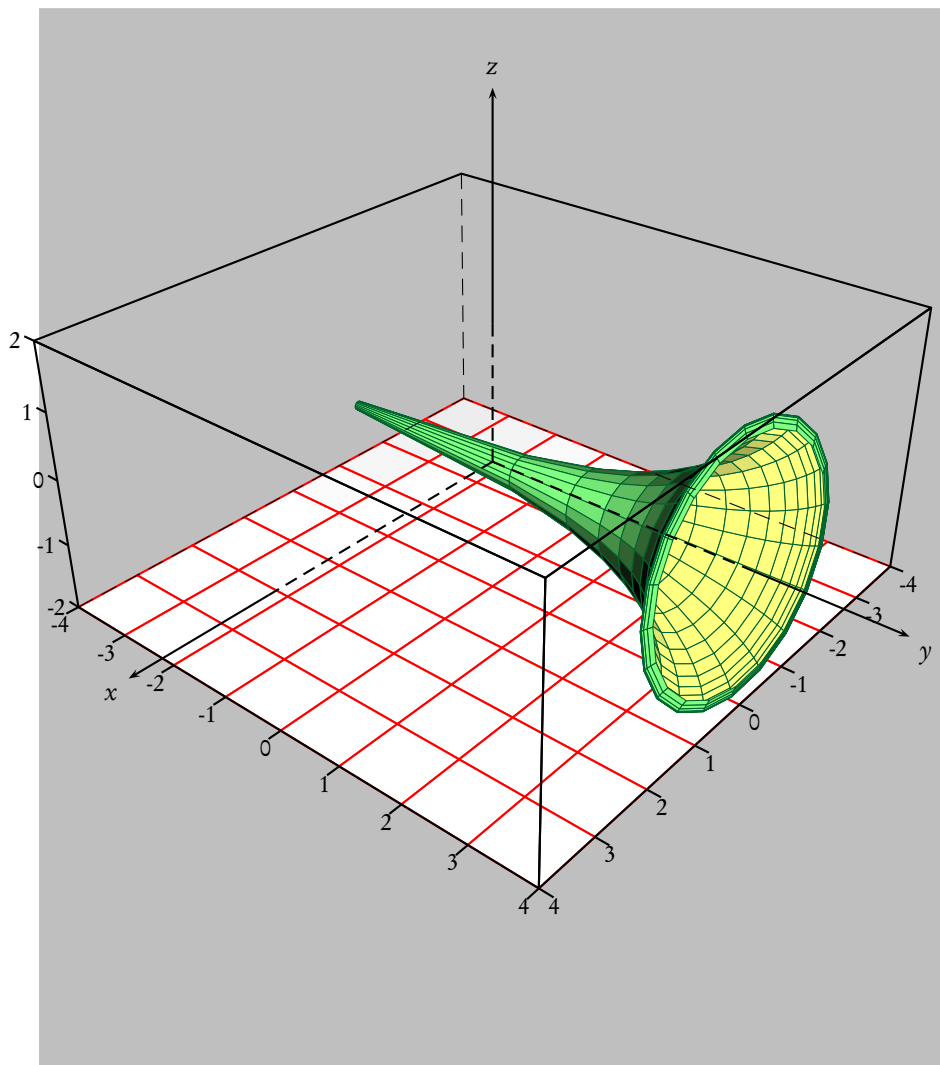


```

1 \begin{pspicture}(-7,-6)(7,5)
2 \psframe*[linecolor=gray!30](-7,-6)(7,5)
3 \psset[pst-solides3d]{viewpoint=100 50 20,SphericalCoord,Decran=100,lightsrc=10 15 10}
4 \defFunction[algebraic]{corne}(u,v){(2 + u*cos(v))*sin(2*pi*u)}{(2 + u*cos(v))*cos(2*pi*u) + 2*u}{u *sin(v)}
5 \psSolid[object=grille,base=-4 4 -3 5,action=draw*,linecolor=blue](0,0,-2)
6 \psSolid[object=surfaceparametree,linecolor=blue,
7   base=0 1 0 2 pi mul,fillcolor=blue!50,incolor=yellow!50,
8   function=corne,linewidth=0.5\pslinewidth,
9   ngrid=20]%
10 \quadrillage
11 \end{pspicture}

```

## 29 Trompette, version 1

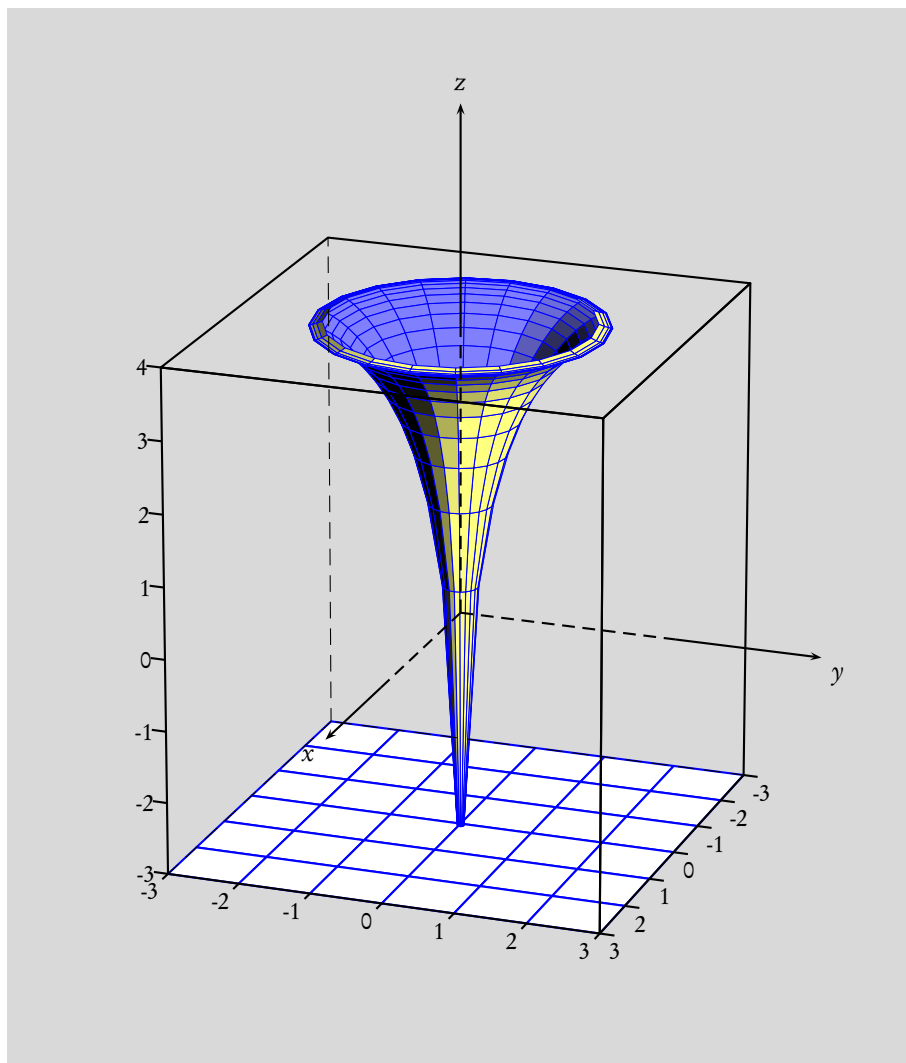


```

1 \begin{pspicture}(-6,-8)(6,6)
2 \psframe*[linecolor=gray!50](-6,-8)(6,6)
3 \psset[pst-solides3d]{viewpoint=20 40 30,SphericalCoor,Decran=20,lightsrc=10 15 10}
4 \defFunction[algebraic]{trompette}(u,v){cos(u)*sin(v)}{cos(v)+ln(tan(1/2*v))+2}{sin(u)*sin(v)}
5 % en notation RPN
6 %\defFunction{trompette}(u,v){u Cos v Sin mul}{v Cos 0.5 v mul Tan log 2.3 mul add}{u Sin v Sin mul}
7 \psSolid[object=grille,base=-4 4 -4 4,action=draw*,linecolor=red](0,0,-2)
8 \psSolid[object=surfaceparametree,linecolor={[cmyk]{1,0,1,0.5}},
9   base=0 2 pi mul 0.03 2,fillcolor=yellow!50,incolor=green!50,
10  function=trompette,linewidth=0.5\pslinewidth,unit=2,
11  ngrid=20]%
12 \gridIIID[Zmin=-2,Zmax=2](-4,4)(-4,4)
13 \end{pspicture}

```

### 30 Trompette, version 2



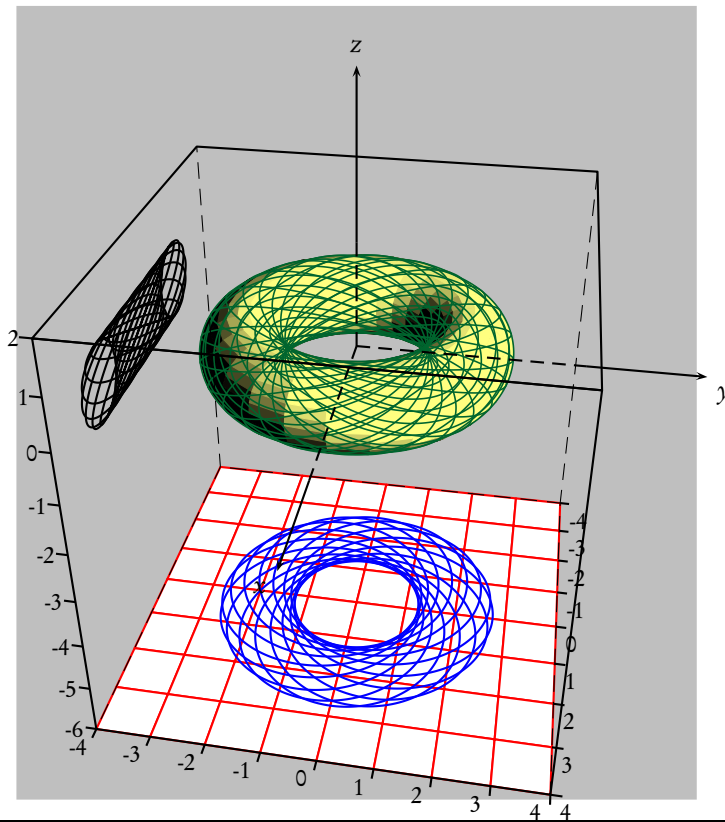
```

1 \begin{pspicture}(-6,-6)(6,8)
2 \psframe*[linecolor=gray!30](-6,-6)(6,8)
3 \psset[pst-solides3d]{viewpoint=100 20 20,SphericalCoord,Decran=100,lightsrc=10 15 10}
4 \defFunction[algebraic]{trompette}(u,v){cos(u)*sin(v)}{sin(u)*sin(v)}{cos(v)+ln(tan(1/2*v))+2}
5 \psSolid[object=grille,base=-3 3 -3 3,action=draw*,linecolor=blue](0,0,-3)
6 \psSolid[object=surfaceparametree,linecolor=blue,
7   base=0 2 pi mul 0.0221 2,fillcolor=yellow!50,incolor=blue!50,
8   function=trompette,linewidth=0.5\pslinewidth,unit=2,
9   ngrid=20]%
10 \gridIIID[Zmin=-3,Zmax=4,QZ=0.5](-3,3)(-3,3)
11 \end{pspicture}

```

## 31 Les cercles de Villarceau



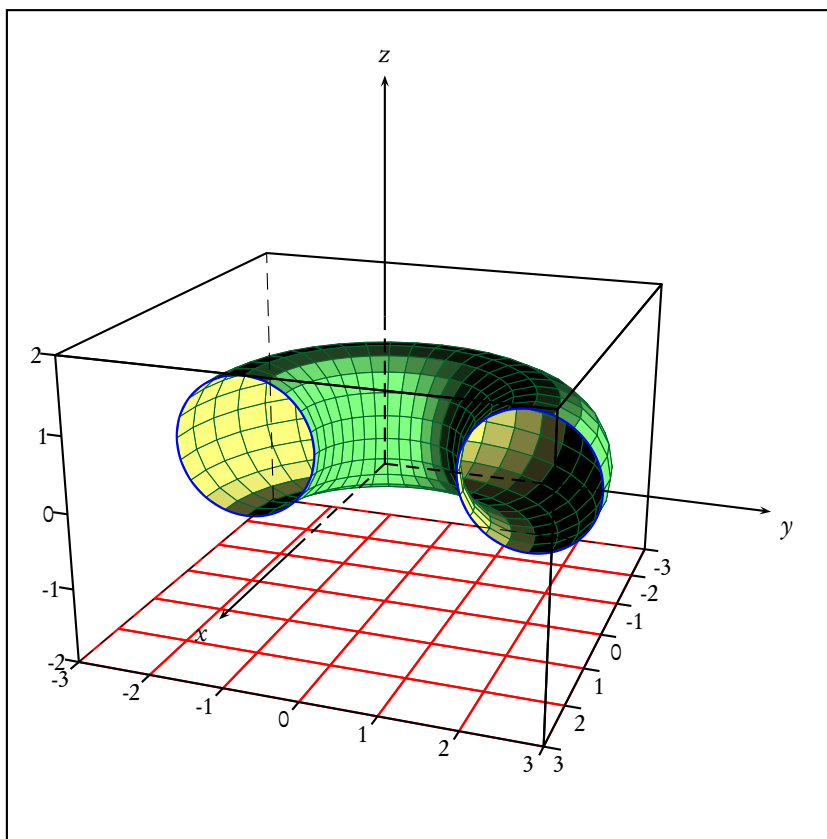


```

1 \psset{unit=0.75}
2 \begin{pspicture}(-6,-8)(6,6)
3 \psframe*[linecolor=gray!50](-6,-8)(6,6)
4 \psset[pst-solides3d]{viewpoint=20 10 30,SphericalCoor,Decran=20,lightsrc=10 15 10}
5 \psSolid[object=grille,base=-4 4 -4 4,action=draw*,linecolor=red](0,0,-6)
6 defFunction[algebraic]{torus}(u,v){(\Radius+ \radius*cos(u))*cos(v)}{(\Radius+ \radius*cos(u))*sin(v)}{\radius*sin(u)}
7 \psSolid[object=surfaceparametree,
8   base=0 2 pi mul 0 2 pi mul ,action=draw**,fillcolor=yellow!50,linecolor=yellow,incolor=yellow!50,grid,
9   function=torus,linewidth=0.5\pslinewidth,grid,
10  ngrid=25]%
11 \multido{\r=0+0.3927}{16}{%
12 defFunction[algebraic]{villarceauxy}(t){sqrt(\Radius^2-\radius^2)*cos(\r)*sin(t)-(\radius+\Radius*cos(t))*sin(\r)}{sqrt(\Radius^2-\radius^2)*sin(\r)*sin(t)+(\radius+\Radius*cos(t))*cos(\r)}{-6}
13 \psSolid[object=courbe,
14   range=0 2 pi mul,linecolor=blue,
15   resolution=360,function=villarceauxy]%
16 defFunction[algebraic]{villarceau}(t){sqrt(\Radius^2-\radius^2)*cos(\r)*sin(t)-(\radius+\Radius*cos(t))*sin(\r)}{sqrt(\Radius^2-\radius^2)*sin(\r)*sin(t)+(\radius+\Radius*cos(t))*cos(\r)}{\radius*sin(t)}
17 \psSolid[object=courbe,
18   range=0 2 pi mul,
19   linecolor={cmyk}{1,0,1,0.5}},linewidth=0.75\pslinewidth,
20   resolution=360,
21   function=villarceau]%
22 defFunction[algebraic]{villarceau}(t){sqrt(\Radius^2-\radius^2)*cos(\r)*sin(t)+(\radius+\Radius*cos(t))*sin(\r)}{sqrt(\Radius^2-\radius^2)*sin(\r)*sin(t)-(\radius+\Radius*cos(t))*cos(\r)}{\radius*sin(t)}
23 \psSolid[object=courbe,
24   range=0 2 pi mul,
25   linecolor={cmyk}{1,0,1,0.5}},linewidth=0.75\pslinewidth,
26   resolution=360,
27   function=villarceau]%
28 defFunction[algebraic]{villarceauyz}(t){sqrt(\Radius^2-\radius^2)*cos(\r)*sin(t)-(\radius+\Radius*cos(t))*sin(\r)}{-4}{\radius*sin(t)}
29 \psSolid[object=courbe,
30   range=0 2 pi mul,
31   resolution=360,
32   function=villarceauyz}]
33 \gridIIID[Zmin=-6,Zmax=2,QZ=-2](-4,4)(-4,4)
34 \end{pspicture}

```

## 32 Un tore coupé par un plan méridien

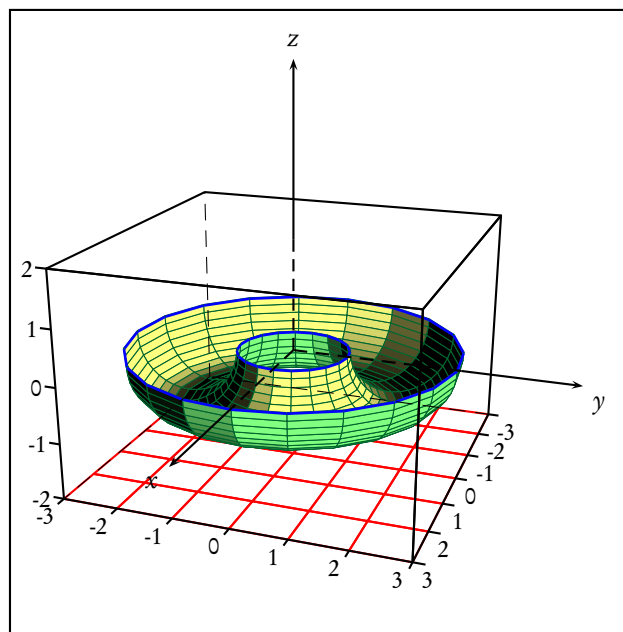


```

1 \begin{pspicture}(-5,-5)(6,6)
2 \psframe(-5,-5)(6,6)
3 \psset[pst-solides3d]{viewpoint=20 20 20,SphericalCoord,Decran=20,lightsrc=10 15 0}
4 % Parametric Surfaces
5 \psSolid[object=grille,base=-3 3 -3 3,action=draw,linecolor=red](0,0,-2)
6 \defFunction[algebraic]{torus}(u,v){(1+ 0.5*cos(u))*cos(v)}{(1+ 0.5*cos(u))*sin(v)}{0.5*sin(u)}
7 \psSolid[object=surfaceparametree,linecolor={[cmyk]{1,0,1,0.5}},
8   base=0 2 pi mul pi 2 div neg pi 2 div,fillcolor=yellow!50,incolor=green!50,
9   function=torus,linewidth=0.5\pslinewidth,unit=2,RotZ=180,
10  ngrid=20]%
11 \defFunction[algebraic]{cercleA}(t){0}{0.5*cos(t)+1}{0.5*sin(t)}
12 \psSolid[object=courbe,
13   range=0 2 pi mul,unit=2,
14   linecolor=blue,
15   resolution=360,
16   function=cercleA]%
17 \defFunction[algebraic]{cercleB}(t){0}{0.5*cos(t)-1}{0.5*sin(t)}
18 \psSolid[object=courbe,
19   range=0 2 pi mul,unit=2,
20   linecolor=blue,
21   resolution=360,
22   function=cercleB]%
23 \gridIIID[Zmin=-2,Zmax=2](-3,3)(-3,3)
24 \end{pspicture}

```

### 33 Un tore coupé par l'équateur



```

1 \psset{unit=0.75}
2 \begin{pspicture}(-5,-5)(6,6)
3 \psframe(-5,-5)(6,6)
4 \psset[pst-solides3d]{viewpoint=20 20 20,SphericalCoord,Decran=20,lightsrc=10 15 0}
5 % Parametric Surfaces
6 \psSolid[object=grille,base=-3 3 -3 3,action=draw,linecolor=red](0,0,-2)
7 \defFunction[algebraic]{torus}(u,v){(1+ 0.5*cos(u))*cos(v)}{(1+ 0.5*cos(u))*sin(v)}{0.5*sin(u)}
8 \psSolid[object=surfaceparametree,linecolor={[cmyk]{1,0,1,0.5}},
9   base=pi neg 0 0 2 pi mul ,fillcolor=yellow!50,incolor=green!50,
10  fonction=torus,linewidth=0.5\pslinewidth,unit=2,
11  tracelignedeniveau=true,
12  hauteurlignedeniveau=-.01,
13  linewidthlignedeniveau=1,
14  couleurlignedeniveau=blue,
15  ngrid=20]%
16 \gridIIID[Zmin=-2,Zmax=2](-3,3)(-3,3)
17 \end{pspicture}

```