Ingenieurbüro Baumann --- www.leobaumann.de --- 46282 Dorsten, Markt 6
manuelle Berechnung eines horizontalen L-Dipols in einer Höhe b2 über Grund
h = Länge, b2 = Höhe über Grund, l = Wellenlänge

```
reset():digits:=16:wh:=0*PI/180:k:=1/1000:wv:=0*PI/180:w:=90*PI/180:
h:=40:b2:=12:l:=80:
```

Richtdiagramm im Kugelraum als Funktion der Winkel

```
c:=(the,phi1) -> abs((cos(PI*h/l*cos(the)*sin(phi1))-
cos(PI*h/l))/(sqrt(1-cos(the)^2*sin(phi1-k)^2)))
                  *2*abs(sin(PI*2*b2/l*cos(phi1)))
                  +abs((cos(PI*h/l*cos(the-w)*sin(phi1))-
   cos(PI*h/l))/(sqrt(1-cos(the-w)^2*sin(phi1-k)^2)))
                  *2*abs(sin(PI*2*b2/l*cos(phi1))):
```

Antennenimpedanz nach 4nec2 mittengespeist an einem Schenkel

```
Z:=86.9+I*76.5
```

$$86.9 + 76.5 \cdot i$$

Antennenimpedanzen nach 4nec2 endgespeist

```
Z:=6639+I*4089;
```

$$6639 + 4089 \cdot i$$

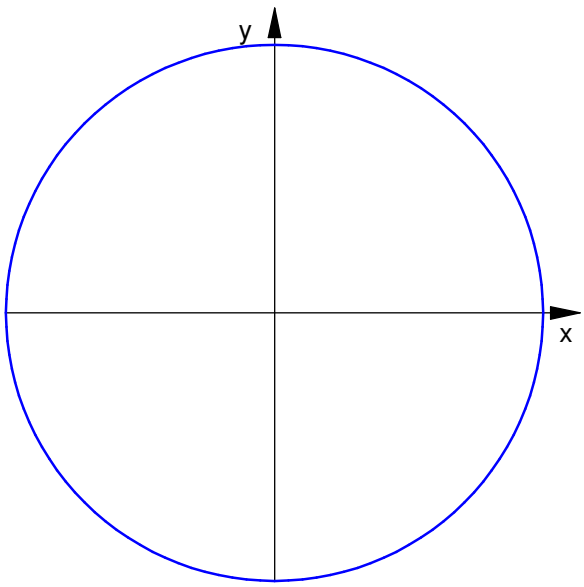
Antennenimpedanzen nach 4nec2 mittengespeist in der Ecke

```
Z:=2133+I*3492;
```

$$2133 + 3492 \cdot i$$

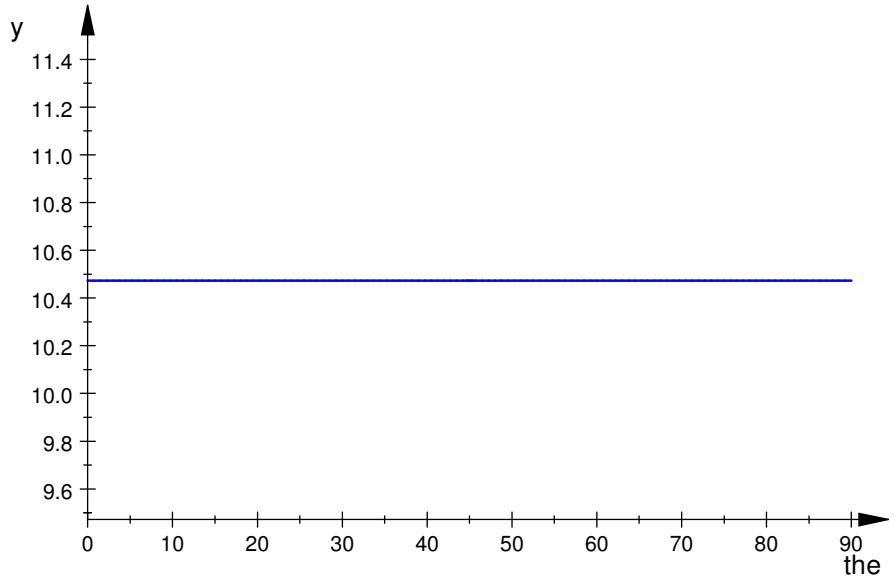
Horizontaldiagramm

```
plot(plot::Polar([c(the,wv),the], the = 0..2*PI, TicksNumber=None,
Scaling=Constrained));
```

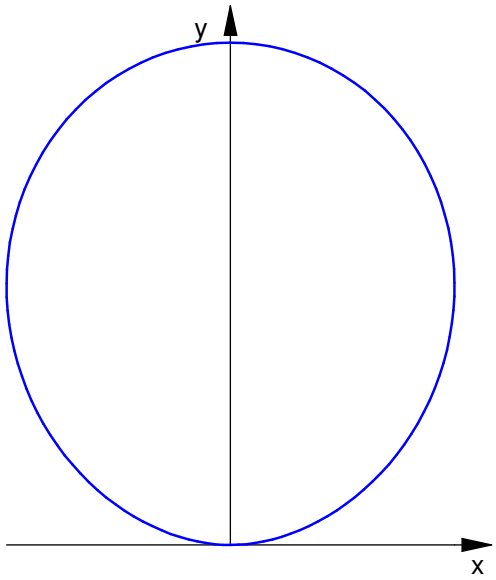
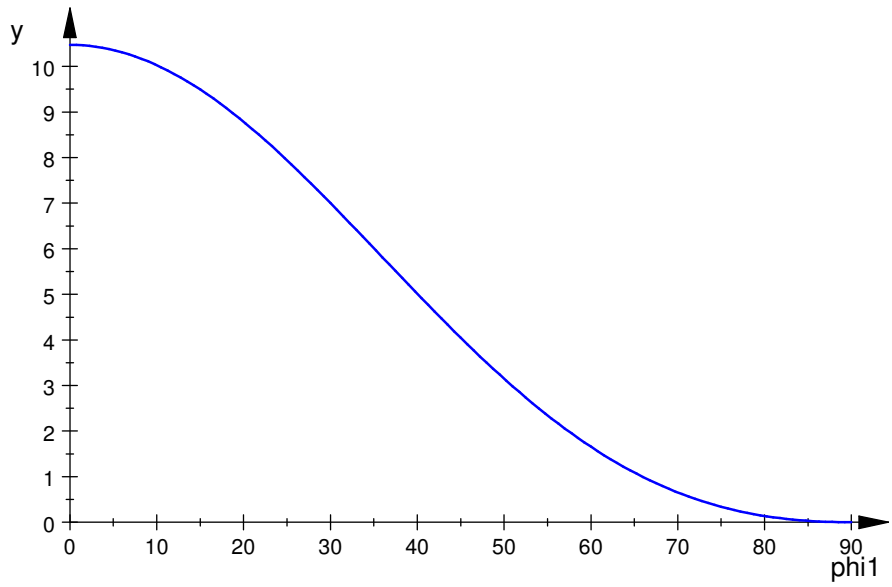


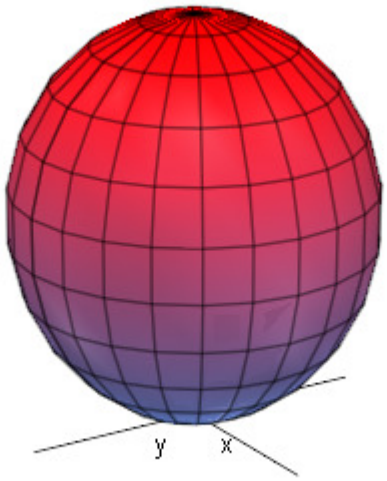
horizontale relative Strahlungsleistungsdichte

- `plotfunc2d(c(the*PI/180,wv)^2, the = 0..90):`



Maximalwert der relativen Stahlungsleistungsdichte , auch in dBi

- ```
  ghmax:=0:ghwmax:=0:for m from 0 to 2879 step 1 do
  gh:=float(c(m*PI/5760,wv)^2);
  if gh>ghmax then
        ghmax:=gh;
        ghwmax:=float(m/32);
  end_if;
  end_for:ghmax;float(10*ln(ghmax)/ln(10)+2.15);ghwmax;
  ```
  ```

10.47214119

12.35035489

0.0

Vertikaldiagramm

- `plot(plot::Polar([c(wh,phi1),phi1+PI/2], phi1 = -PI/2..PI/2, TicksNumber=None, Scaling=Constrained));`



vertikale relative Strahlungsleistungsdichte

- `plotfunc2d(c(wh,phi1*PI/180)^2, phi1 = 0..90):`



-

Maximalwert der relativen Stahlungsleistungsdichte , auch in dBi

- ```
  gvmax:=0:gvwmax:=0:for m from 0 to 2879 step 1 do
  gv:=float(c(wh,m*PI/5760)^2);
  if gv>gvmax then
       gvmax:=gv;
       gvwmax:=float(m/32);
  end_if;
  end_for:gvmax;float(10*ln(gvmax)/ln(10)+2.15);gvwmax;
  ```

  10.47214119

  12.35035489

  0.0

- ```
  delete
  the,phi1:graph:=plot::Surface([cos(the)*sin(phi1)*c(the,phi1),sin(th
  e)*sin(phi1)*c(the,phi1),cos(phi1)*c(the,phi1)],the=0..2*PI, phi1=-
  PI/2..PI/2,Axes=Origin, TicksNumber=None, Scaling=Constrained,
  AdaptiveMesh=4):
  ```
- ```
  plot(graph);
  ```
  ```


y
x