Ingenieurbüro Baumann --- www.leobaumann.de --- Markt 6, 46282 Dorsten
manuelle Berechnung eines horizontalen Dipols im freien Raum
h = Länge, l = Wellenlänge

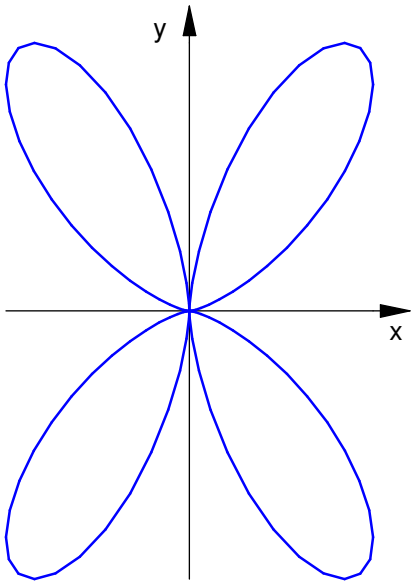
```
reset():digits:=16:k:=1/1000:wh:=57*PI/180:wv:=89.9999*PI/180:h:=2:l:=1:
```

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)^2))):
```

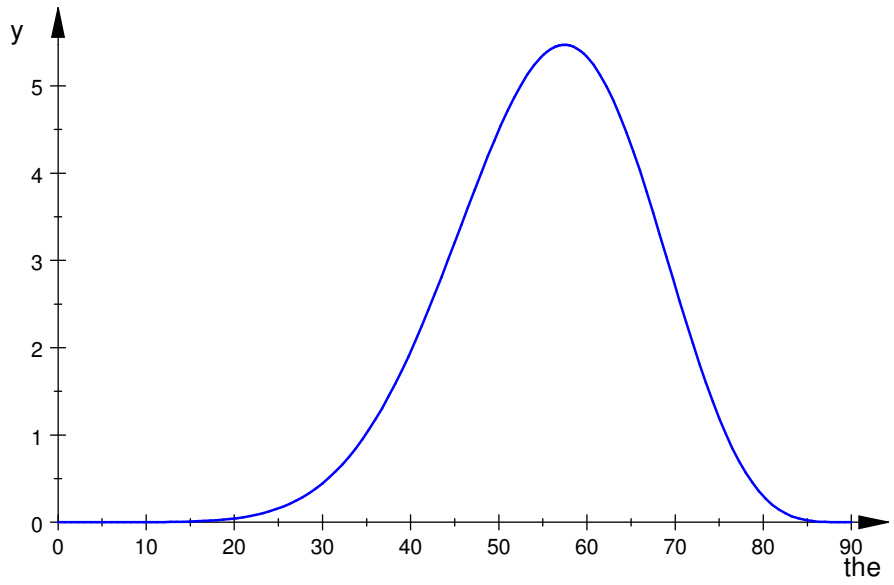
Horizontaldiagramm

```
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, Erhebungswinkel 0 Grad

```
ghmax:=0:ghwmax:=0:for m from 1 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;
```

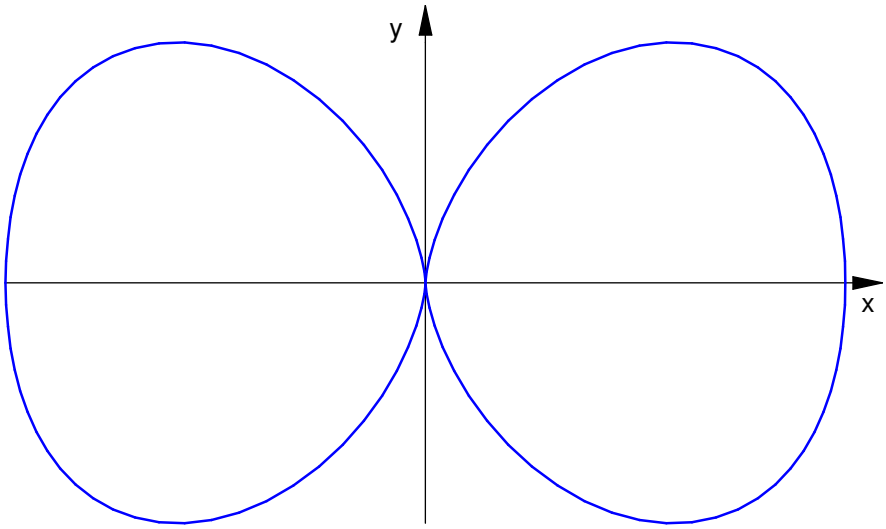
5.47083461

9.530535857

57.4375

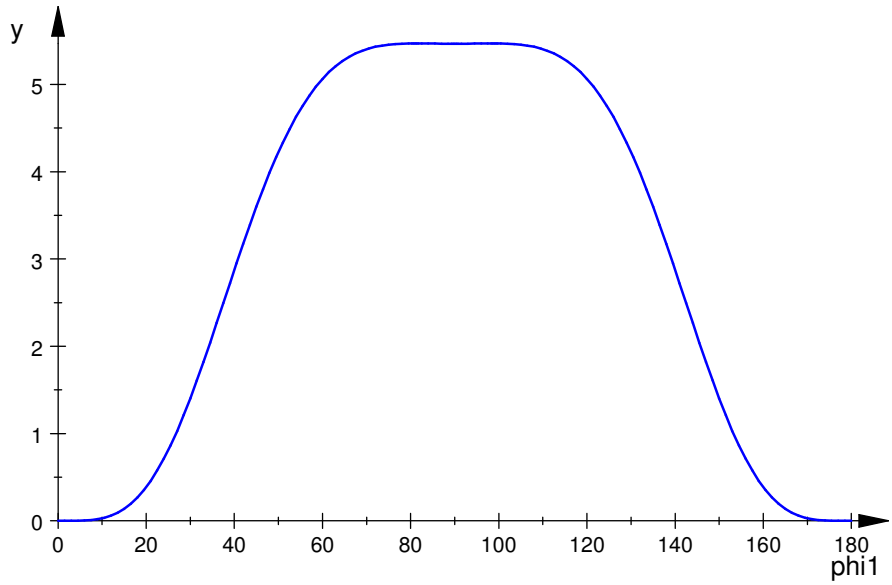
Vertikaldiagramm

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



vertikale relative Strahlungsleistungsdichte

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



Maximalwert der relativen Stahlungsleistungsdichte , auch in dBi

- ```
  gvmax:=0:gvwmax:=0:for m from 1 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;
  ```
  ```

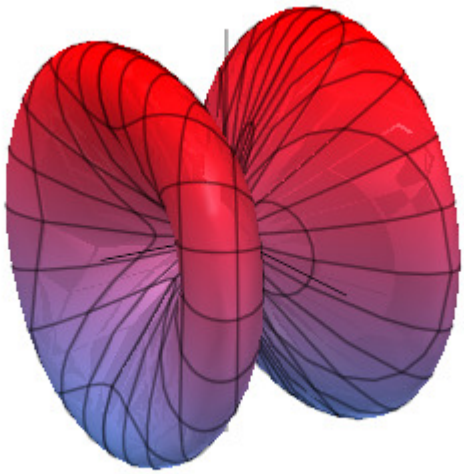
```
end_for:gvmax;float(10*ln(gvmax)/ln(10)+2.15);gvwmax;
```

5.470834639

9.53053588

81.1875

- ```
  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..PI,Axes=Origin, TicksNumber=None, Scaling=Constrained,
  AdaptiveMesh=4):
  ```
- ```
  plot(graph);
  ```



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