Ingenieurbüro Baumann --- www.leobaumann.de --- Markt 6, 46282 Dorsten
manuelle Berechnung eines vert. Quads über Grund
h = Länge, b2 = Höhe über Grund (Unterkante), bet = Phasenverschiebung, l = Wellenlänge

```
reset():digits:=16:wv:=58.90625*PI/180:wh:=90*PI/180:h:=1/2:d:=1/2:b
2:=1/2:l:=1:
```

Richtdiagramm im Kugelraum als Funktion der Winkel

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

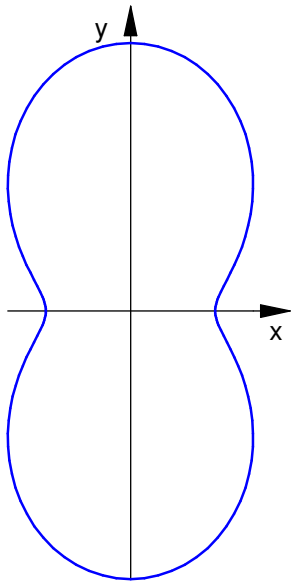
Antennenimpedanz nach 4nec2 einseitig mittengespeist

```
Z:=115+I*17.4;
```

$$115.0 + 17.4 \cdot i$$

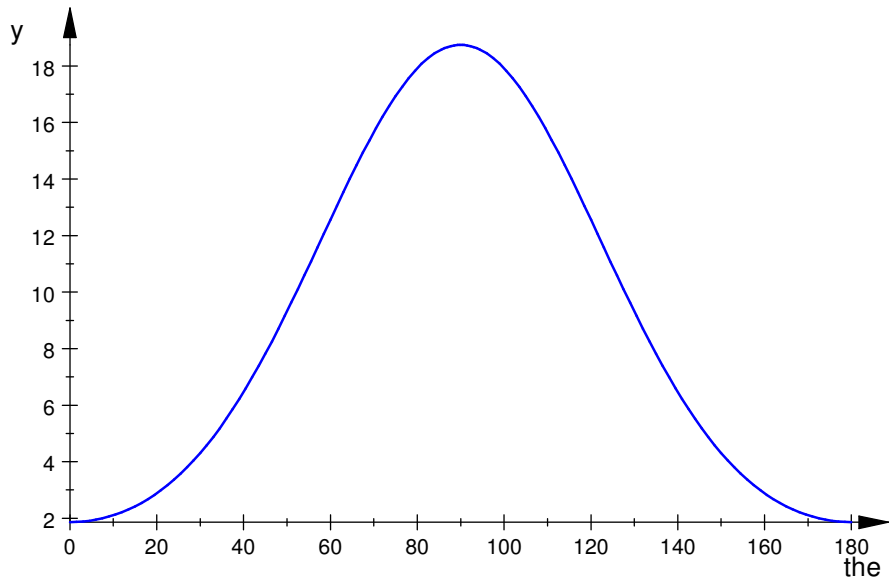
Horizontaldiagramm

```
plot(plot::Polar([c(the,wv),the], the = 0..2*PI, TicksNumber=None,
Scaling=Constrained, AdaptiveMesh=4));
```



horizontale relative Strahlungsleistungsdichte

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



Maximalwert der relativen Stahlungsleistungsdichte , auch in dBi

```
ghmax:=0:ghwmax:=0:for m from 0 to 2880 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;
```

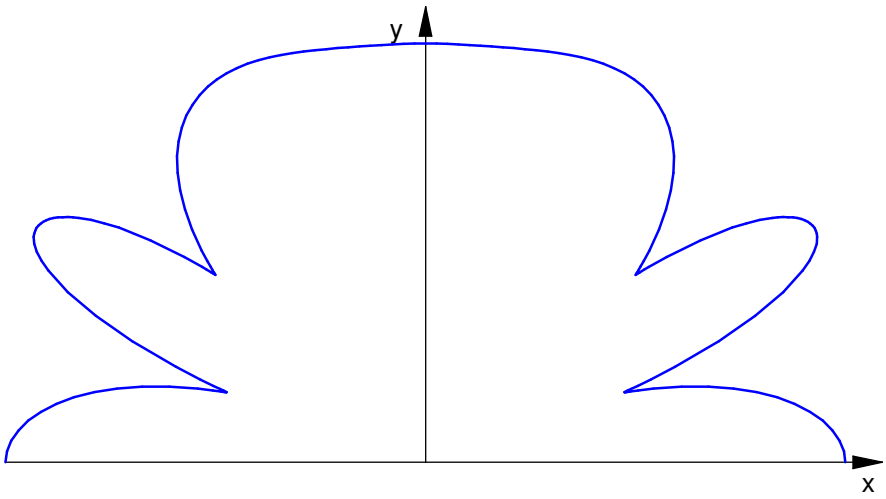
18.74699655

14.879317

90.0

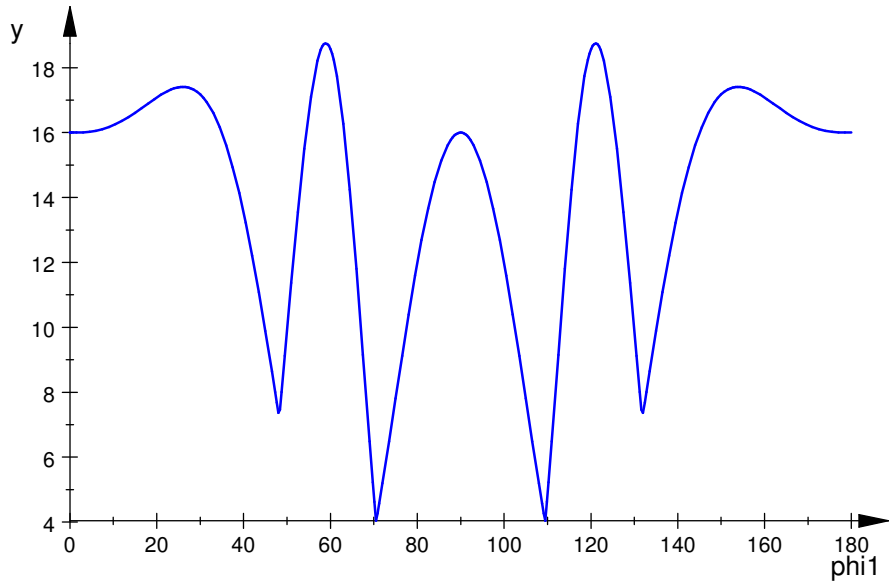
Vertikaldiagramm

```
plot(plot::Polar([c(wh,phi1),phi1+PI/2], phi1 = -PI/2..PI/2,
TicksNumber=None, Scaling=Constrained, AdaptiveMesh=4));
```



vertikale relative Strahlungsleistungsdichte

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



Maximalwert der relativen Stahlungsleistungsdichte , auch in dB

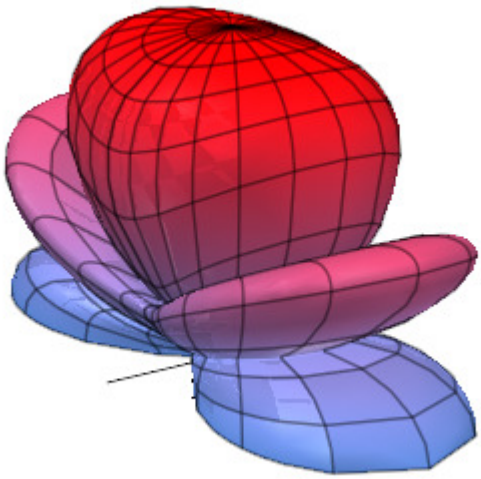
- ```
  gvmax:=0:gvwmax:=0:for m from 1 to 2880 step 1 do
  gv:=float(c(wh,m*PI/5760)^2);
  if gv>gvmax then
        gvmax:=gv;
        gvwmax:=float(m/32);
  end_if;
  end_for:gvmax;float(10*ln(gvmax)/ln(10)+2.15);gvwmax;
  ```
  ```

18.74699655

14.879317

58.90625

- ```
  graph:=plot::Surface([cos(the)*sin(phi1)*c(the,phi1),sin(the)*sin(ph
  i1)*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);
  ```



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