

Ingenieurbüro Baumann --- www.leobaumann.de --- Markt 6, 46282 Dorsten
 manuelle Berechnung eines vertikalen Kreuz-Dipols über perfektem Grund
 h = Länge, l = Wellenlänge, b2 = Höhe über Grund, d1 = Reflektorabstand

- `reset():digits:=16:k:=1/1000:wh:=90*PI/180:vw:=40.65625*PI/180:b2:=1/2:d1:=1/2:h:=1/2:l:=1:d2:=1/1000:k1:=h/l:`

Richtdiagramm im Kugelraum als Funktion der Winkel

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

Antennenimpedanzen nach BALANIS mittengespeist

- `float(30*(EULER+ln(2*PI*k1)-Ci(2*PI*k1)+1/2*sin(2*PI*k1)*(Si(4*PI*k1)-2*Si(2*PI*k1))+1/2*cos(2*PI*k1)*(EULER+ln(PI*k1)+Ci(4*PI*k1)-2*Ci(2*PI*k1)))));`

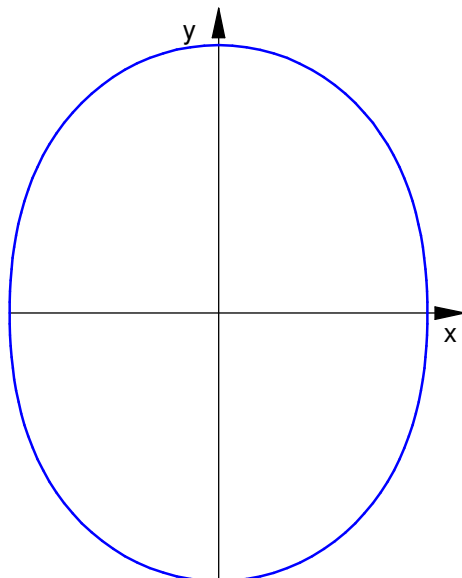
36.5648009

- `float(15*(2*Si(2*PI*k1)+cos(2*PI*k1)*(2*Si(2*PI*k1)-Si(4*PI*k1))-sin(2*PI*k1)*(2*Ci(2*PI*k1)-Ci(4*PI*k1)-Ci(2*2*PI*d2^2/4/k1/l^2)))));`

21.27227364

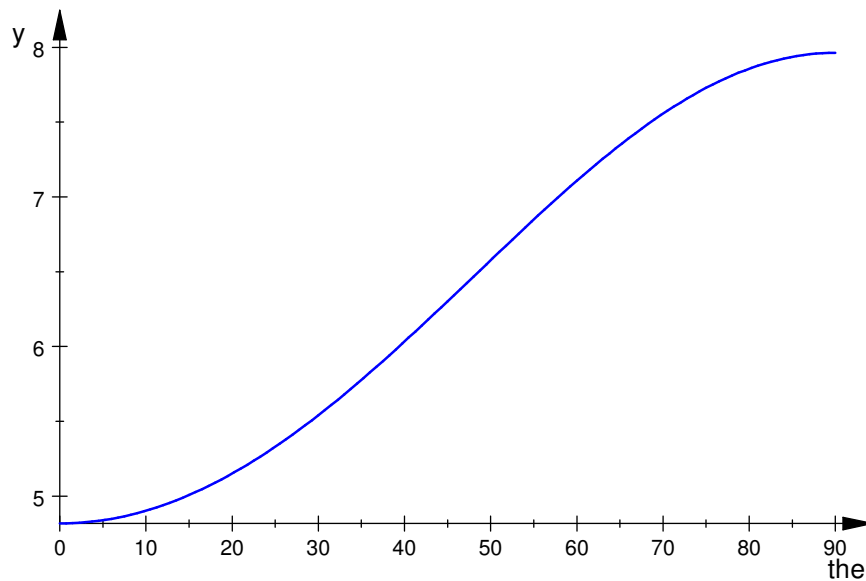
Horizontaldiagramm

- `plot(plot::Polar([c(the,vw),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 Strahlungsleistungsdichte , auch in dBi, Erhebungswinkel 0 Grad

- ```
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;
```

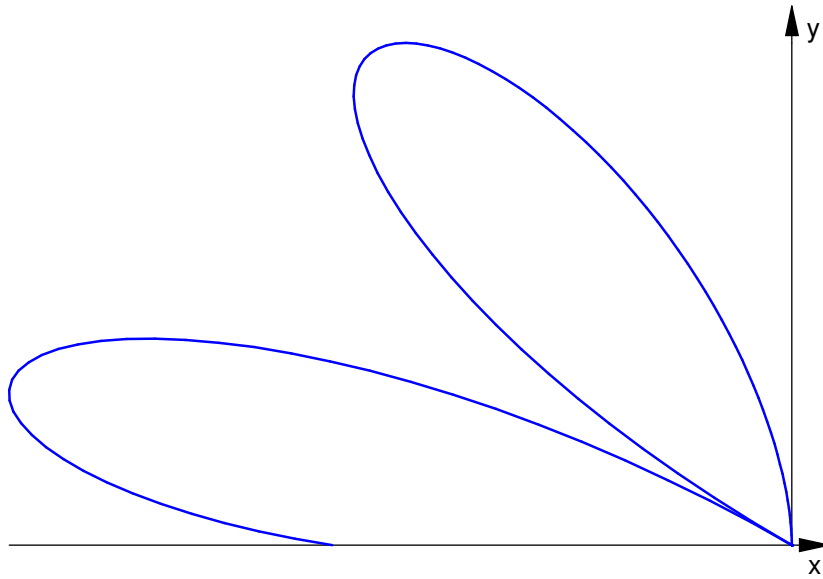
7.963389691

11.16097969

90.0

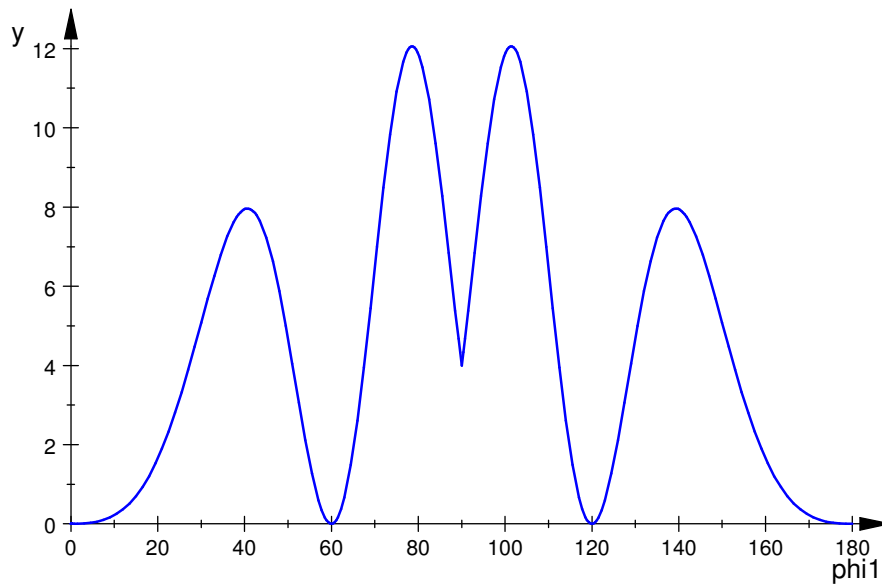
Vertikaldiagramm

- `plot(plot::Polar([c(wh,phi1),phi1+PI/2], phi1 = 0..PI/2, TicksNumber=None, Scaling=Constrained));`



vertikale relative Strahlungsleistungsdichte

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



Maximalwert der relativen Strahlungsleistungsdichte , auch in dBi

- ```
gvmax:=0:gvwmax:=0:for m from 1 to 1600 step 1 do
gv:=float(c(wh,m*PI/5760)^2);
if gv>gvmax then
gvmax:=gv;
gvwmax:=float(m/32);
end_if;
```

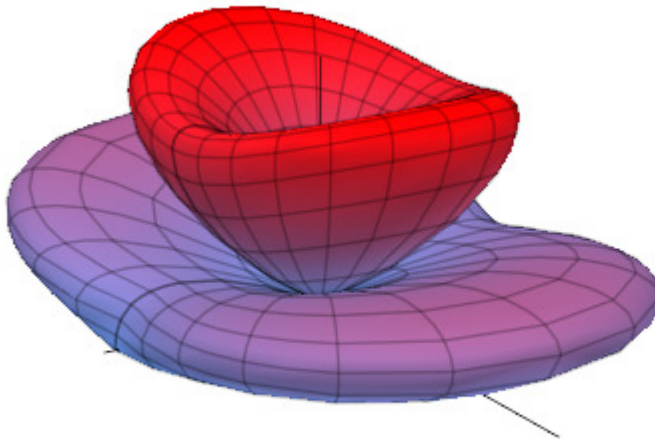
```
end_for:gvmax;float(10*ln(gvmax)/ln(10)+2.15);gvwmax;
```

7.963389691

11.16097969

40.65625

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



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