

Ingenieurbüro Baumann --- www.leobaumann.de --- Markt 6, 46282 Dorsten

manuelle Berechnung eines vert. Quads über Grund

$h$  = Länge,  $\beta$  = Phasenverschiebung,  $l$  = Wellenlänge

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

Richtdiagramm im Kugelraum als Funktion der Winkel

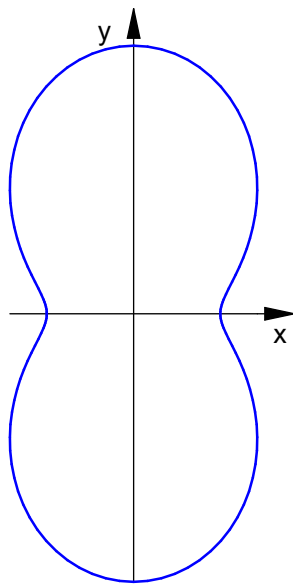
- `c:=(the,phil) -> abs((cos(PI*h/l*cos(phil))-cos(PI*h/l))/sin(phil))  
*2*abs(cos(PI*d/l*cos(the)*sin(phil)))  
+abs((cos(PI*d/l*cos(the)*sin(phil))-  
cos(PI*d/l))/sqrt(1-cos(the)^2*sin(phil)^2))  
*2*abs(sin(PI*h/l*cos(phil))):`

Antennenimpedanz nach 4nec2 einseitig mittengespeist

- `Z:=115+I*17.4;`  
 $115.0 + 17.4 \cdot i$

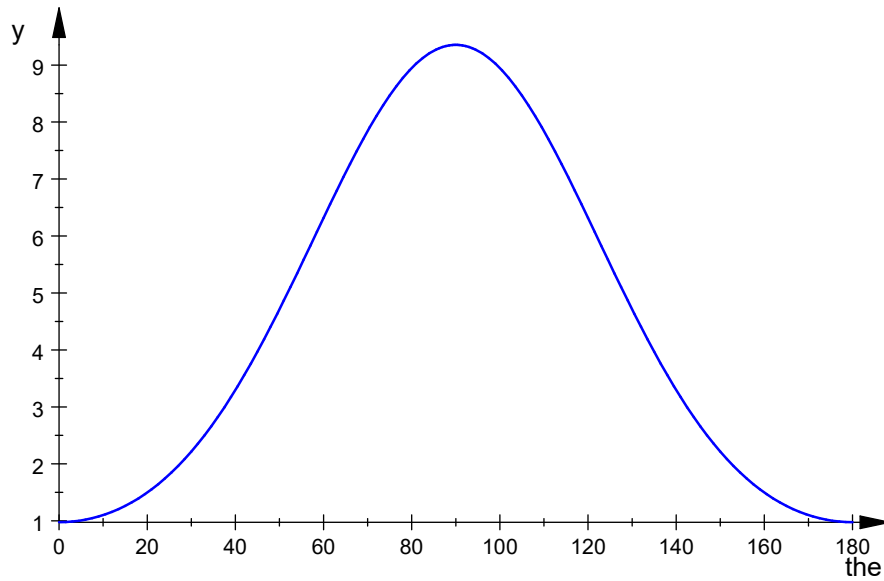
Horizontaldiagramm

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



horizontale relative Strahlungsleistungsdichte

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



Maximalwert der relativen Strahlungsleistungsdichte , 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*log(10,ghmax)+2.15);ghwmax;

```

9.354784733

11.86033798

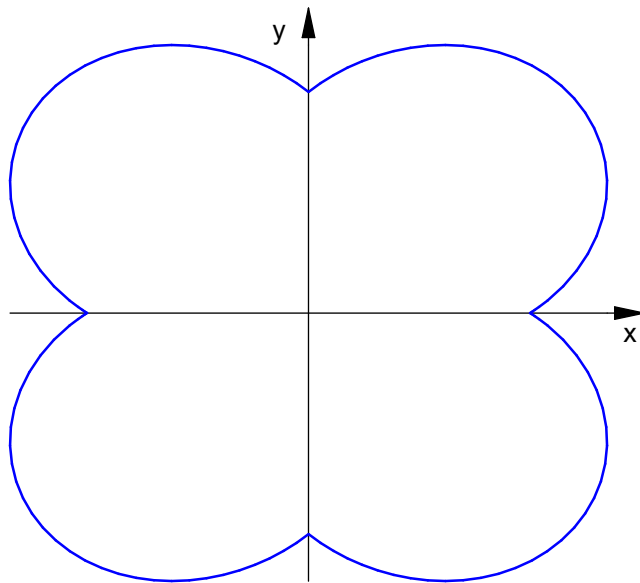
90.0

Vertikaldiagramm

- ```

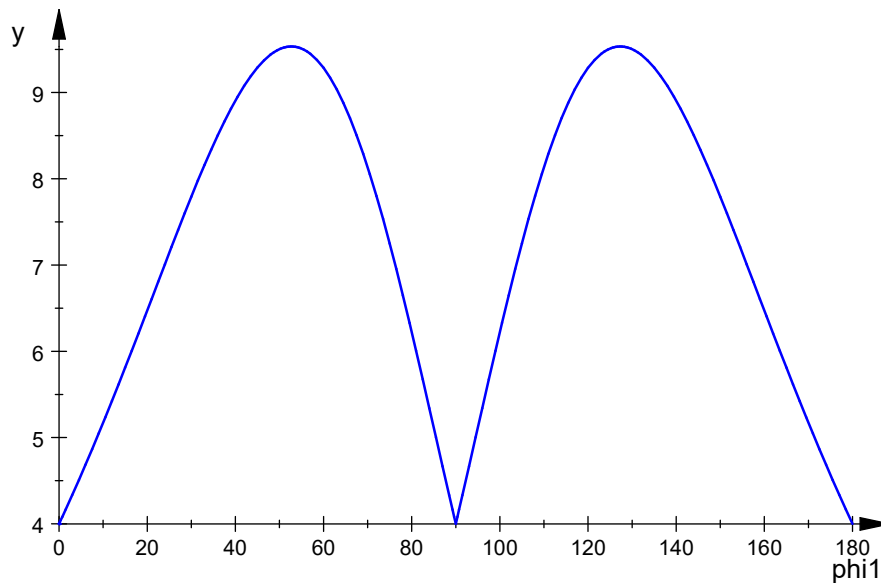
plot(plot::Polar([c(wh,phil),phil+PI/2], phil = -PI..PI,
    TicksNumber=None, Scaling=Constrained, AdaptiveMesh=4));

```



vertikale relative Strahlungsleistungsdichte

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



Maximalwert der relativen Strahlungsleistungsdichte , auch in dB

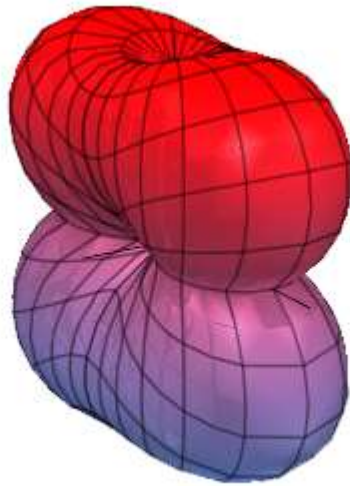
- `gvmax:=0:gvwmax:=0:for m from 1 to 2880 step 1 do  
gv:=float(c(wh,m*PI/5760)^2);  
if gv>gvmax then  
gvmax:=gv;  
gvwmax:=float(m/32);  
end_if;  
end_for:gvmax;float(10*log(10,gvmax)+2.15);gvwmax;`

9.533564191

11.94255295

52.6875

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



- `graph:=(plot::Spherical([c(the,phil),the,phil], the=0..2*PI,phil=0..2*PI, Axes=Origin, TicksNumber=None, Scaling=Constrained, AdaptiveMesh=4)):`
- `plot(graph);`

