

Ingenieurbüro Baumann --- www.leobaumann.de --- Markt 6, 46282 Dorsten  
 manuelle Berechnung eines vert. Duo-Quads (2 nebeneinander) vor einem Reflektor über Grund  
 h = Länge, b2 = Höhe über Grund (Unterkante), d = Distanz Parallele, l = Wellenlänge

- `reset():digits:=16:w:=90*PI/180:vw:=58.90625*PI/180:wh:=90*PI/180:h:=1/2:d:=1/2:d1:=1/2:b2:=1/2:l:=1:`

Richtdiagramm im Kugelraum als Funktion der Winkel

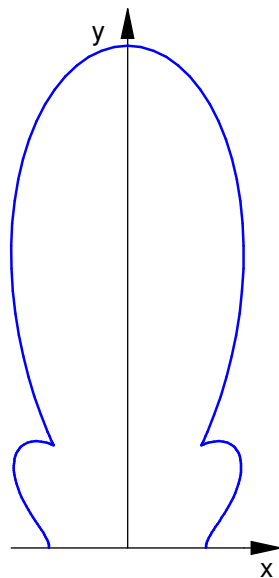
- `c:=(the,phil) -> abs((cos(PI*h/l*cos(phil))-cos(PI*h/l))/sin(phil))  
 *2*abs(cos(PI*d/l*cos(the)*sin(phil)))  
 *2*abs(cos(PI*2*d/l*cos(the)*sin(phil)))  
 *2*abs(cos(PI*2*(b2+h/2)/l*cos(phil)))  
 +abs((cos(PI*2*h/l*cos(the)*sin(phil))-  
 cos(PI*2*h/l))/sqrt(1-cos(the)^2*sin(phil)^2))  
 *2*abs(sin(PI*d/l*cos(phil)))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

Antennenimpedanz nach 4nec2 einseitig mittengespeist

- `Z:=169+I*19.5;`  
 $169.0 + 19.5 \cdot i$

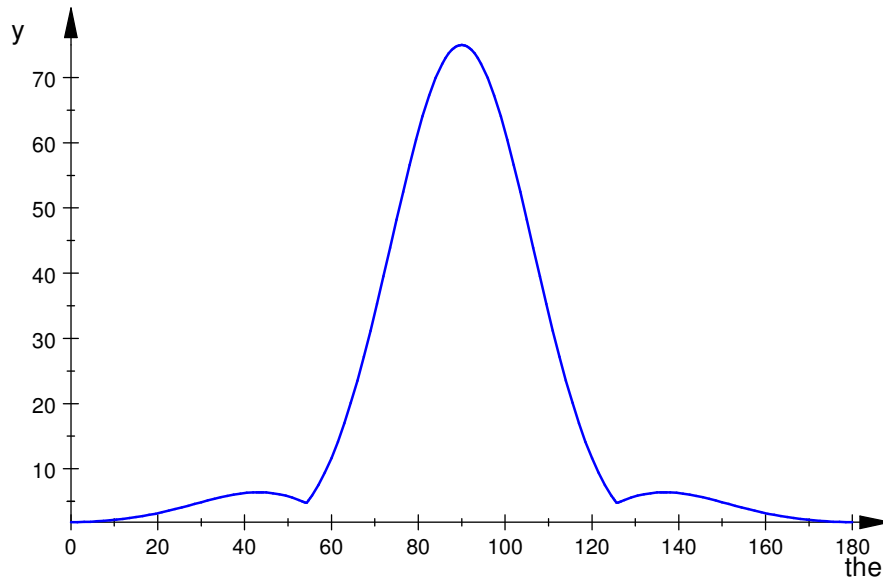
Horizontaldiagramm

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



horizontale relative Strahlungsleistungsdichte

- `plotfunc2d(c(the*PI/180,wv)^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*ln(ghmax)/ln(10)+2.15);ghwmax;

```

74.98798621

20.89991691

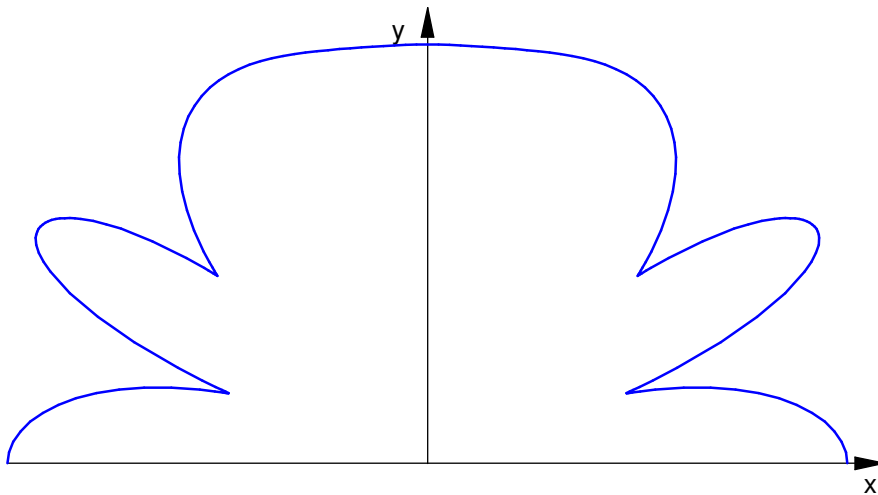
90.0

Vertikaldiagramm

- ```

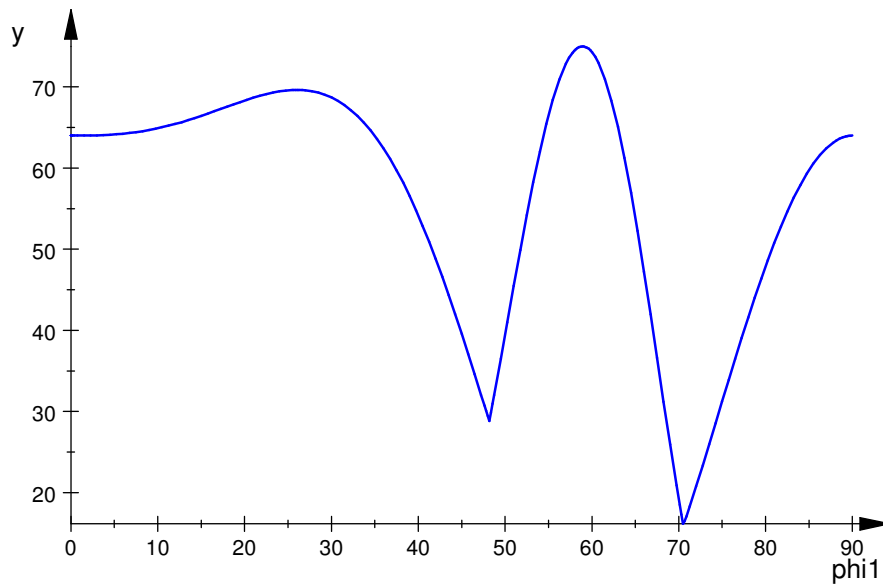
plot(plot::Polar([c(wh,phil),phil+PI/2], phil = -PI/2..PI/2,
  TicksNumber=None, Scaling=Constrained, AdaptiveMesh=4));

```



vertikale relative Strahlungsleistungsdichte

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



Maximalwert der relativen Strahlungsleistungsdichte , auch in dBi

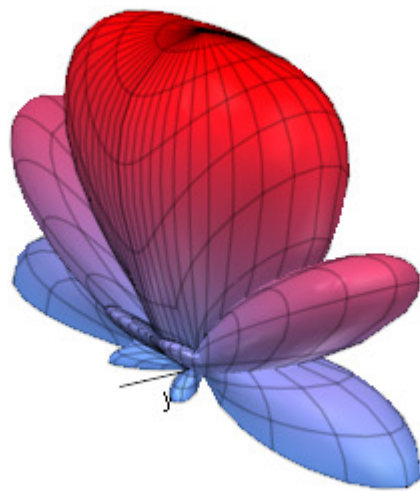
- `gvmax:=0:gvwmax:=0:for m from 1 to 2880 step 1 do  
gv:=float(c(wh,m*PI/5760)^2);  
if gv>gvmax then  
gvmax:=gv;  
gvwmax:=float(m/32);  
end_if;  
end_for:gvmax;float(10*ln(gvmax)/ln(10)+2.15);gvwmax;`

74.98798621

20.89991691

58.90625

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



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