

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

manuelle Berechnung eines vert. Duo-Quads (2 nebeneinander) vor einem Reflektor über Grund

h = Länge, b_2 = 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*d/l*cos(the)*sin(phil))-
cos(PI*2*d/l))/sqrt(1-cos(the)^2*sin(phil)^2))
*2*abs(sin(PI*d/l*cos(phil)))
*2*abs(sin(PI*2*d/l*cos(phil)))
*2*abs(sin(PI*2*(b2+h/2)/l*cos(phil)))`

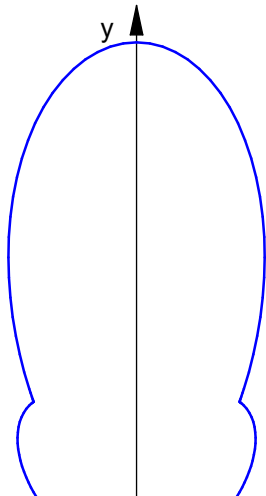
Antennenimpedanz nach 4nec2 einseitig mittengespeist

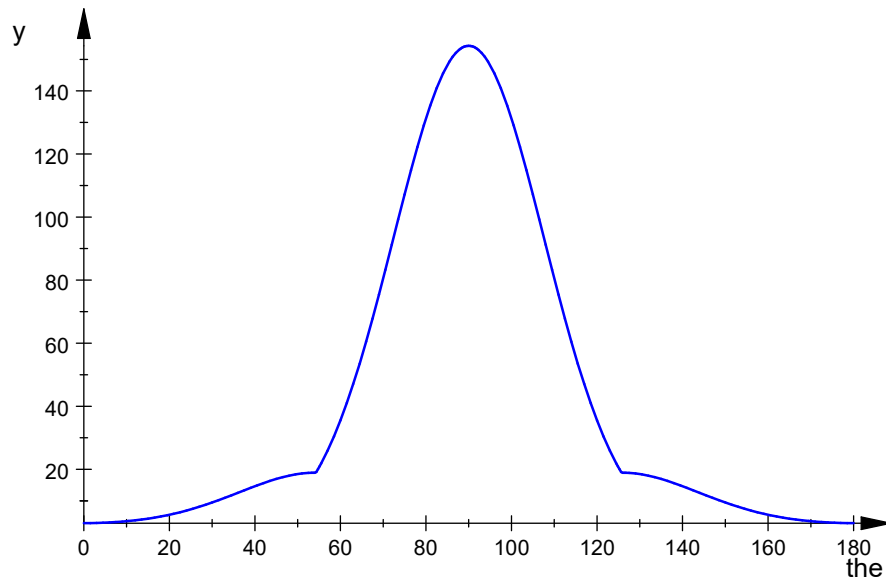
- `Z:=169+I*19.5;`

$$169.0 + 19.5 \cdot i$$

Horizontaldiagramm

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





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;

```

154.298168

24.0336077

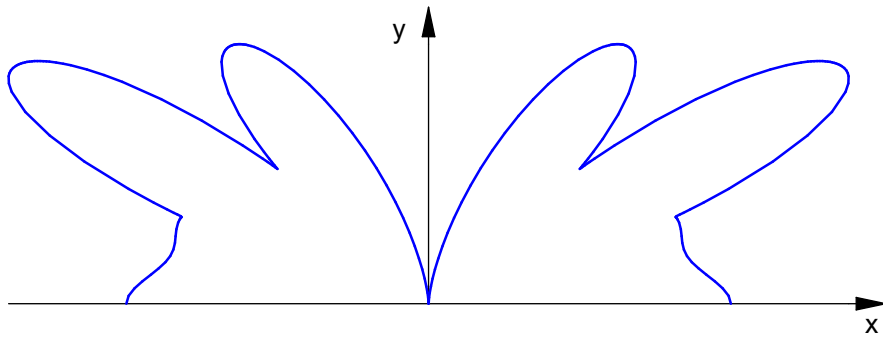
90.0

Vertikaldiagramm

- ```

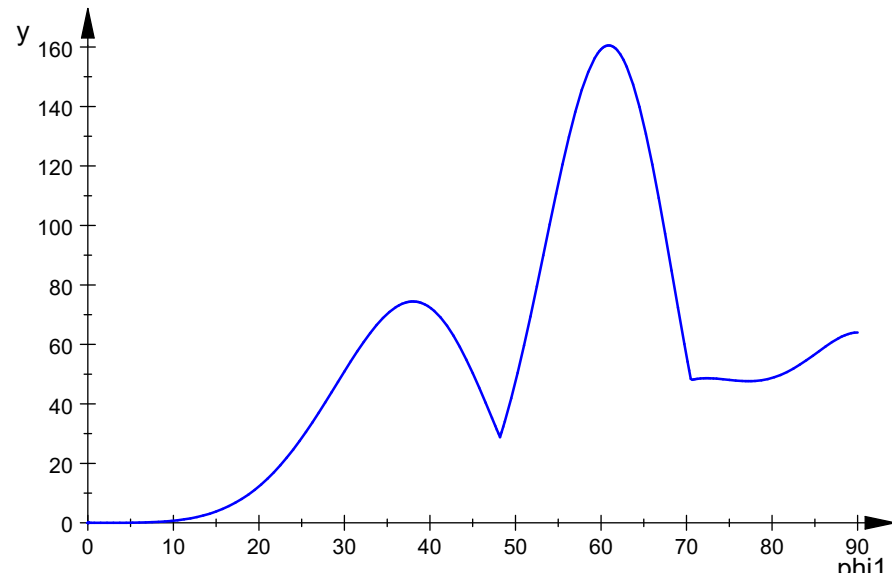
plot(plot::Polar([c(wh,phi1),phi1+PI/2], phi1 = -PI/2..PI/2,
TicksNumber=None, Scaling=Constrained, AdaptiveMesh=4));

```



vertikale relative Strahlungsleistungsdichte

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

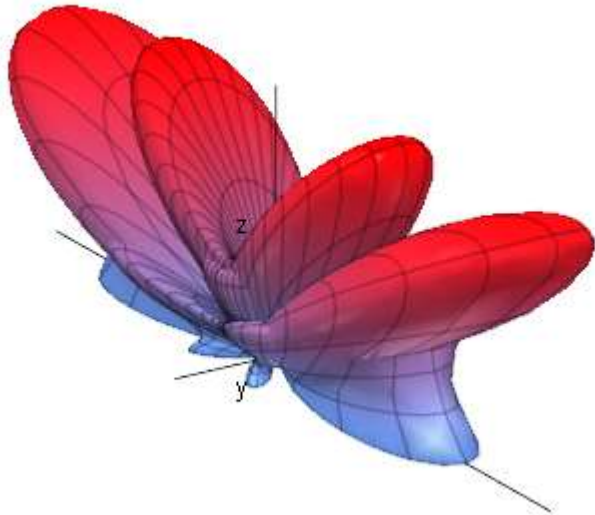


160.5473271

24.2060308

60.90625

- `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,AdaptiveMesh=4):`
- `plot(graph);`



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