

Ingenieurbüro Baumann --- www.leobaumann.de --- Markt 6, 46282 Dorsten  
 manuelle Berechnung eines vert. 3x3-Quads vor einem Reflektor über Grund  
 h = Länge, b2 = Höhe über Grund (Unterkante), d = Distanz Parallele, d1 = Distanz Reflektor, l = Wellenlänge

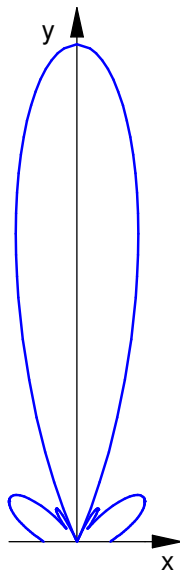
- `reset():digits:=16:w:=90*PI/180:vw:=52.03125*PI/180:wh:=90*PI/180:h:=1/2:d:=1/2:d1:=1/2:b2:=0.15:l:=1:`

### Richtdiagramm im Kugelraum als Funktion der Winkel

- `c:=(the,phil) -> abs((cos(PI*3*h/l*cos(phil))-cos(PI*3*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*3*d/l*cos(the)*sin(phil)))`  
`*2*abs(cos(PI*d1/l*cos(the)*sin(phil)))`  
`*2*abs(cos(PI*2*(b2+3*h/2)/l*cos(phil)))`  
`+abs((cos(PI*3*h/l*cos(the)*sin(phil))-cos(PI*3*h/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*3*d/l*cos(phil)))`  
`*2*abs(sin(PI*d1/l*sin(phil)*sin(the)))`  
`*2*abs(sin(PI*2*(b2+3*h/2)/l*cos(phil)))`:

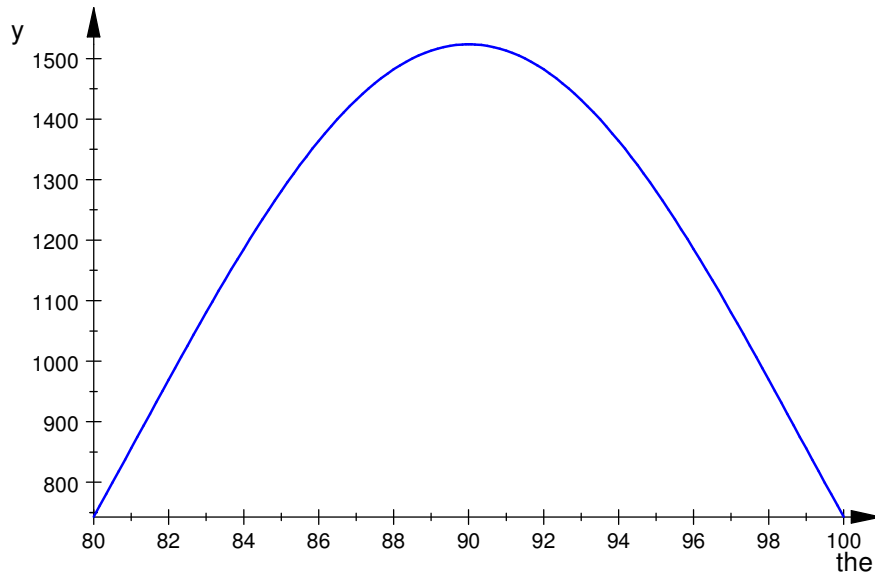
### Horizontaldiagramm

- `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 = 80..100):`



Maximalwert der relativen Strahlungsleistungsdichte , auch in dBi

- ```

ghmax:=0:ghwmax:=0:for m from 1920 to 2879 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;

```

1523.484535

33.9783805

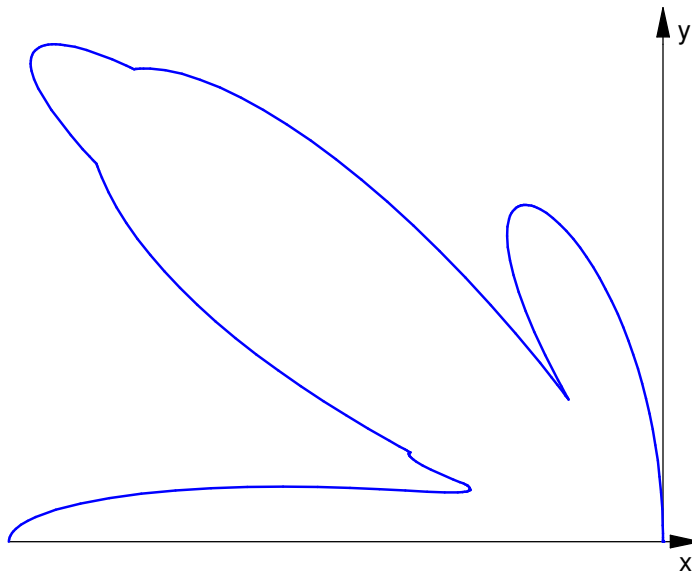
89.96875

Vertikaldiagramm

- ```

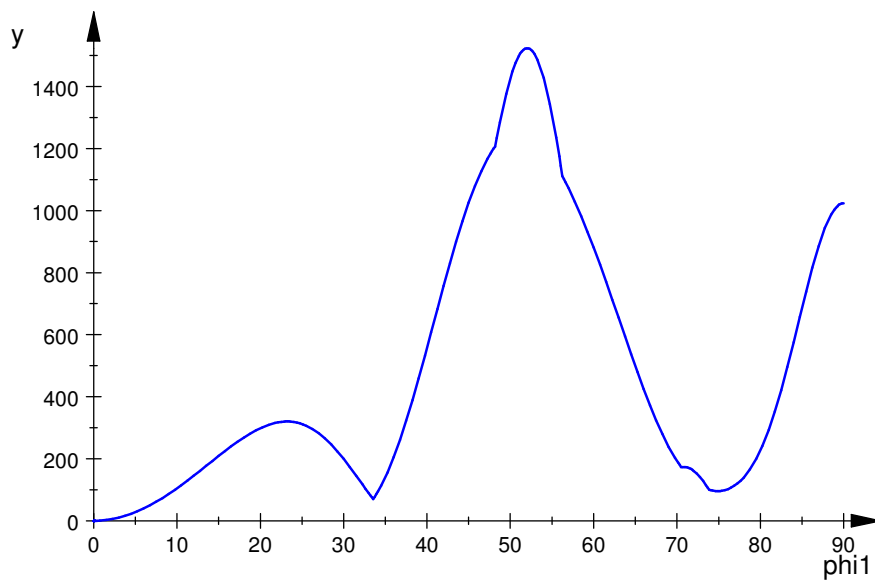
plot(plot::Polar([c(wh,phi1),phi1+PI/2], phi1 = 0..PI/2,
TicksNumber=None, Scaling=Constrained, AdaptiveMesh=4));

```



vertikale relative Strahlungsleistungsdichte

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



Maximalwert der relativen Strahlungsleistungsdichte , auch in dBi

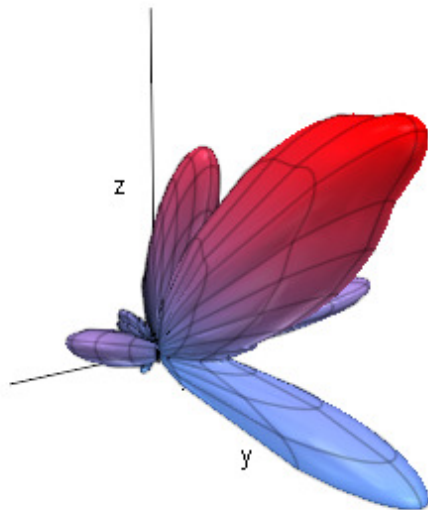
- `gvmax:=0:gvwmax:=0:for m from 1 to 2879 step 1 do  
gv:=float(c(wh,m*PI/5760)^2);  
if gv>gvmax then  
gvmax:=gv;  
gvwmax:=float(m/32);  
end_if;  
end_for:gvmax;float(10*ln(gvmax)/ln(10)+2.15);gvwmax;`

1523.494757

33.97840964

52.03125

- `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..0, Axes=Origin, TicksNumber=None, Scaling=Constrained, AdaptiveMesh=4):`
- `plot(graph);`



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