

horizontal Dipol über perfektem Grund

Antennencharakteristik im Raum

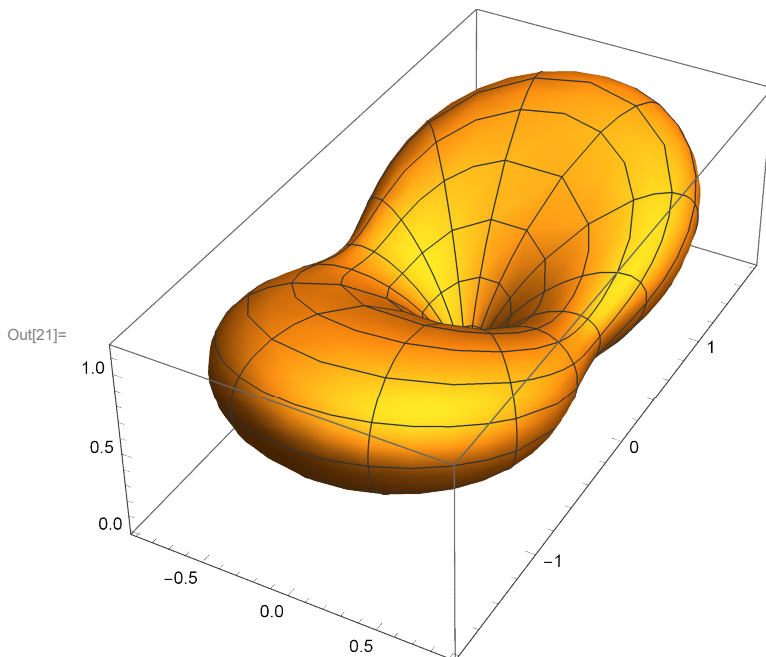
also: In $c[\theta, \phi]$ und ParametricPlot3D bei ϕ Trigonometrie wechseln, Winkel ab x,y-Ebene zu z-Achse pos. zählen

```
In[18]:= time = TimeUsed[]; h = 1 / 2; b2 = 1 / 2; l = 1; wv = 30 * Degree; wh = 90 * Degree;
```

```
In[19]:= c[the_, phi_] := Abs[(Cos[Pi * h / l * Cos[the] * Cos[phi]] - Cos[Pi * h / l]) /  
  (Sqrt[1 - Cos[the]^2 * Cos[phi]^2])] * 2 * Abs[Sin[Pi * 2 * b2 / l * Sin[phi]]];
```

```
In[20]:=
```

```
In[21]:= ParametricPlot3D[{Cos[the] * Cos[phi] * c[the, phi],  
  Sin[the] * Cos[phi] * c[the, phi], Sin[phi] * c[the, phi]}, {phi, 0, Pi / 2},  
  {the, 0, 2 * Pi}, PlotPoints -> 15, Mesh -> Full, PlotRange -> All]
```

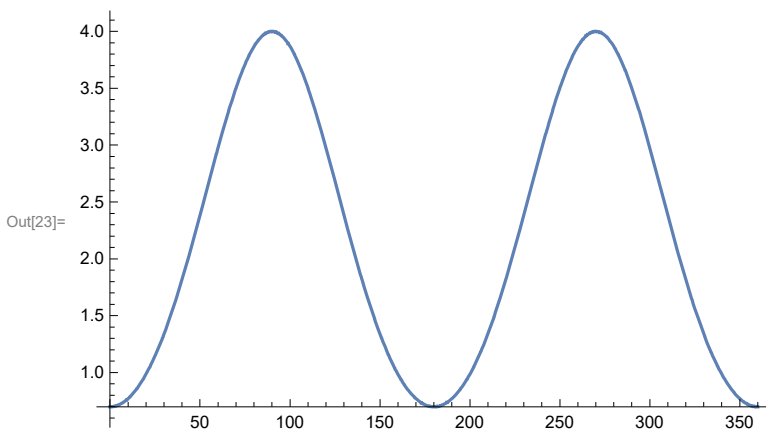
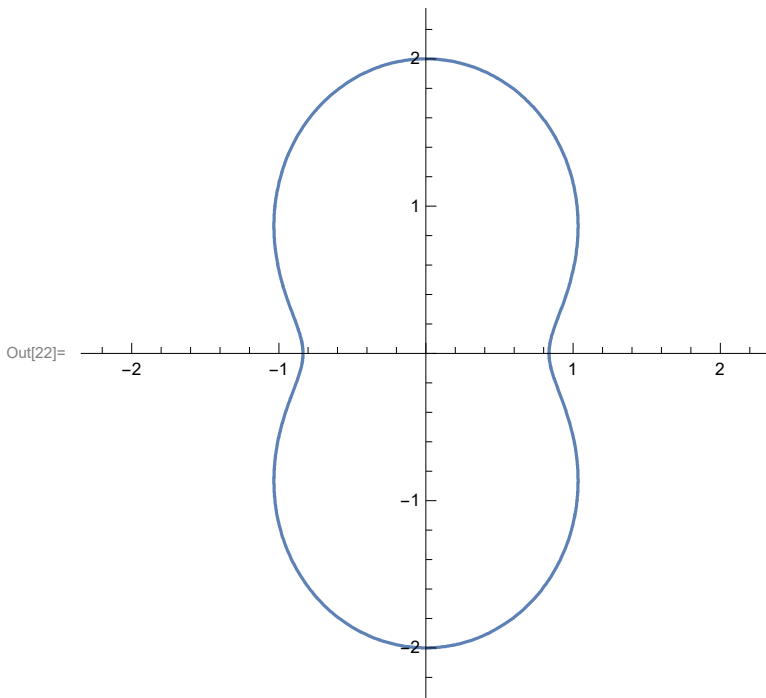


Horizontal-Diagramm, horiz. Strahlungsleistungsdichte u. Maximum bei Winkel auch dBi

```

In[22]:= PolarPlot[c[the, wv], {the, 0, 2 * Pi}, PlotRange -> All]
[Polardarstellung [Krei... [Koordinatenb... [alle
Plot[c[the * Degree, wv]^2, {the, 0, 360}]
[stelle Funktion... [Grad
Maximum = N[FindMaximum[c[the, wv]^2, {the, 45 * Degree}]];
[... [ermittle Maximum [Grad
N[Maximum[[1]]]
[numerischer Wert
N[10 * Log[10, Maximum[[1]]] + 2.15]
[nume... [Logarithmus
N[Maximum[[2]][[1, 2]] / Degree]
[Grad

```



Out[25]= 4.

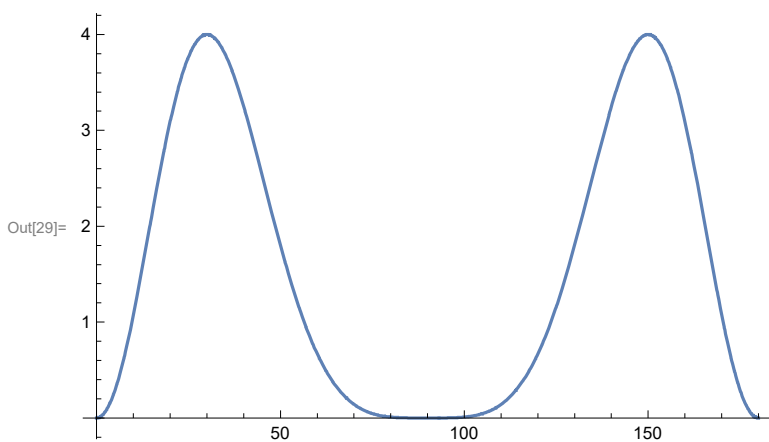
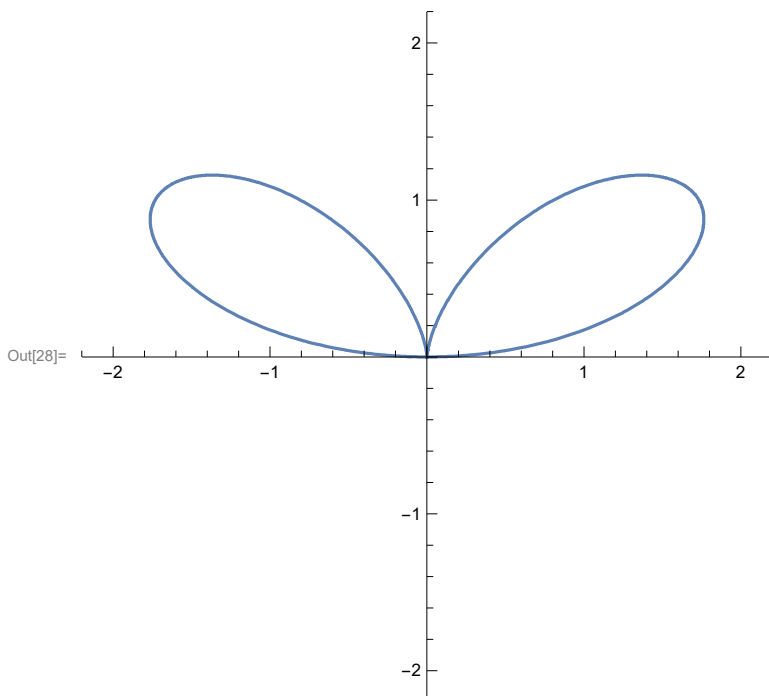
Out[26]= 8.1706

Out[27]= 90.

Vertikal-Diagramm, vertikal. Strahlungsleistungsdichte u.

Maximum bei Winkel auch dBi

```
In[28]:= PolarPlot[c[wh, phi], {phi, 0, Pi}, PlotRange -> All]
          [Polardarstellung [Krei... [Koordinatenb... [alle
Plot[c[wh, phi * Degree]^2, {phi, 0, 180}]
          [stelle Funktion grap... [Grad
Maximum = N[FindMaximum[c[wh, phi]^2, {phi, 0}]];
          [.. [ermittle Maximum
N[Maximum[[1]]]
          [numerischer Wert
N[10 * Log[10, Maximum[[1]]] + 2.15]
          [Logarithmus
N[Maximum[[2]][[1, 2]] / Degree]
          [numerischer Wert [Grad
Print[TimeUsed[] - time, " CPU-Time in seconds"]
          [gib aus [verbrauchte Zeit
```



Out[31]= 4.

Out[32]= 8.1706

Out[33]= 30.

0.329 CPU-Time in seconds