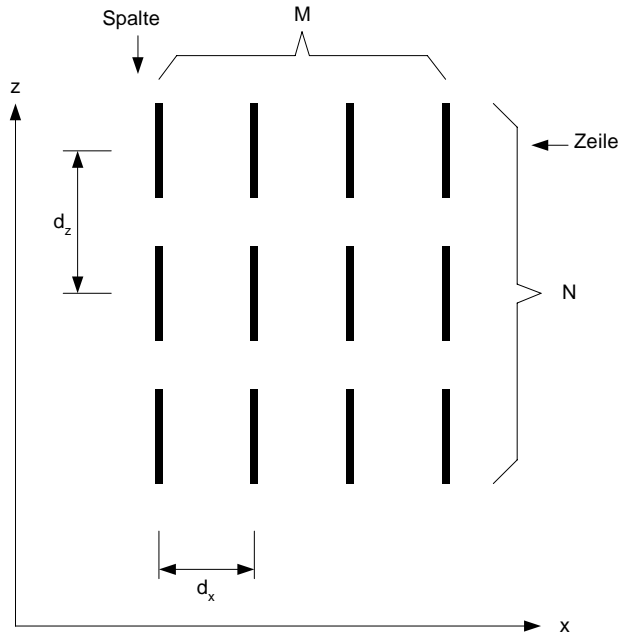


Berechnung von Antennendiagrammen in MathCad: Dipolwand $\lambda/2$ -Dipol

HTI EKT 8.2005 F. Dellsperger

M = Anzahl Spalten N = Anzahl Zeilen d_x = Spaltenabstand (in λ) d_z = Zeilenabstand (in λ)

P = Anzahl Meridiane Q = Anzahl Parallele

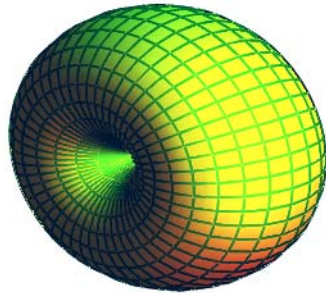


$$C(\theta, \phi, M, N, d_x, d_z) := \frac{\cos\left(\frac{\pi}{2} \cdot \cos(\theta)\right)}{\sin(\theta)} \cdot \frac{1}{N} \cdot \frac{\sin(N \cdot \pi \cdot d_z \cdot \cos(\theta))}{\sin(\pi \cdot d_z \cdot \cos(\theta))} \cdot \frac{1}{M} \cdot \frac{\sin(M \cdot \pi \cdot d_x \cdot \cos(\phi) \cdot \sin(\theta))}{\sin(\pi \cdot d_x \cdot \cos(\phi) \cdot \sin(\theta))}$$

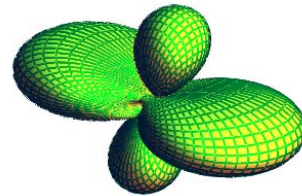
```

plot(M, N, d_x, d_z, P, Q) :=
    ξ ← 0.0001
    for n ∈ 0..Q
        θ ← (2·π·n) / Q + ξ
        for m ∈ 0..P
            φ ← (2·π·m) / P + ξ
            c ← |C(θ + π/2, φ, M, N, d_x, d_z)|
            Xm,n ← c·cos(φ)·cos(θ)
            Ym,n ← c·sin(φ)·cos(θ)
            Zm,n ← c·sin(θ)
            (X)
            (Y)
            (Z)
    
```

$$\begin{pmatrix} x \\ y \\ z \end{pmatrix} := \text{plot}(1, 1, 1, 1, 50, 50)$$



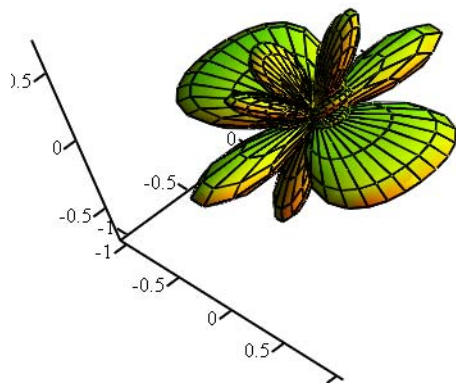
$$\begin{pmatrix} X \\ Y \\ Z \end{pmatrix} := \text{plot}(2, 1, 0.75, 0.75, 100, 100)$$



(x, y, z)

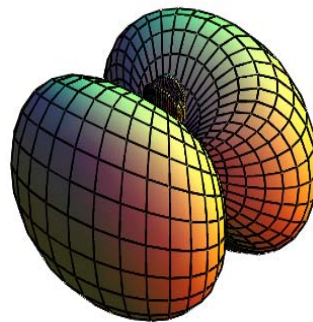
(X, Y, Z)

$$\begin{pmatrix} x \\ y \\ z \end{pmatrix} := \text{plot}(2, 3, 1, 1.5, 50, 100)$$



(x, y, z)

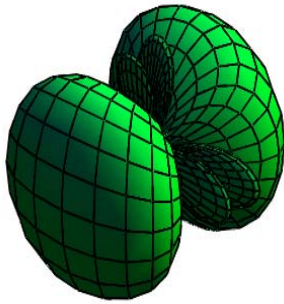
$$\begin{pmatrix} X \\ Y \\ Z \end{pmatrix} := \text{plot}(2, 2, 0.5, 0.75, 70, 90)$$



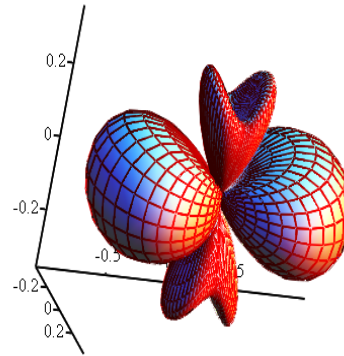
(X, Y, Z)

$$\begin{pmatrix} x \\ y \\ z \end{pmatrix} := \text{plot}(4, 3, 0.5, 0.75, 100, 120)$$

$$\begin{pmatrix} X \\ Y \\ Z \end{pmatrix} := \text{plot}(2, 2, 0.5, 1, 70, 100)$$



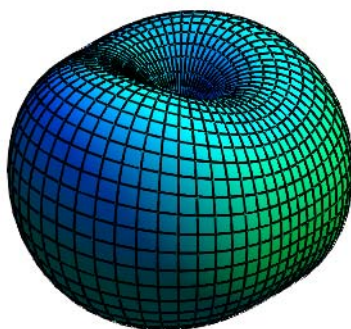
(x, y, z)



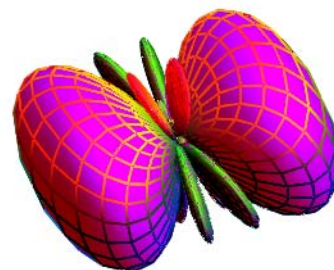
(X, Y, Z)

$$\begin{pmatrix} x \\ y \\ z \end{pmatrix} := \text{plot}(2, 1, 0.25, 0.75, 60, 80)$$

$$\begin{pmatrix} X \\ Y \\ Z \end{pmatrix} := \text{plot}(4, 3, 0.5, 0.75, 100, 120)$$



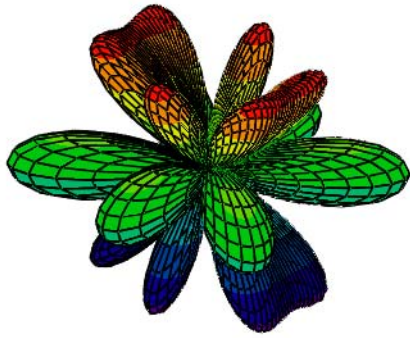
(x, y, z)



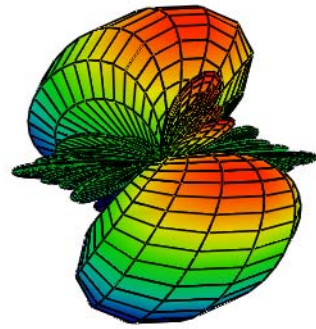
(X, Y, Z)

$$\begin{pmatrix} x \\ y \\ z \end{pmatrix} := \text{plot}(2, 2, 1.5, 1.5, 100, 120)$$

$$\begin{pmatrix} X \\ Y \\ Z \end{pmatrix} := \text{plot}(9, 4, 0.5, 0.75, 150, 250)$$



(x, y, z)



(X, Y, Z)