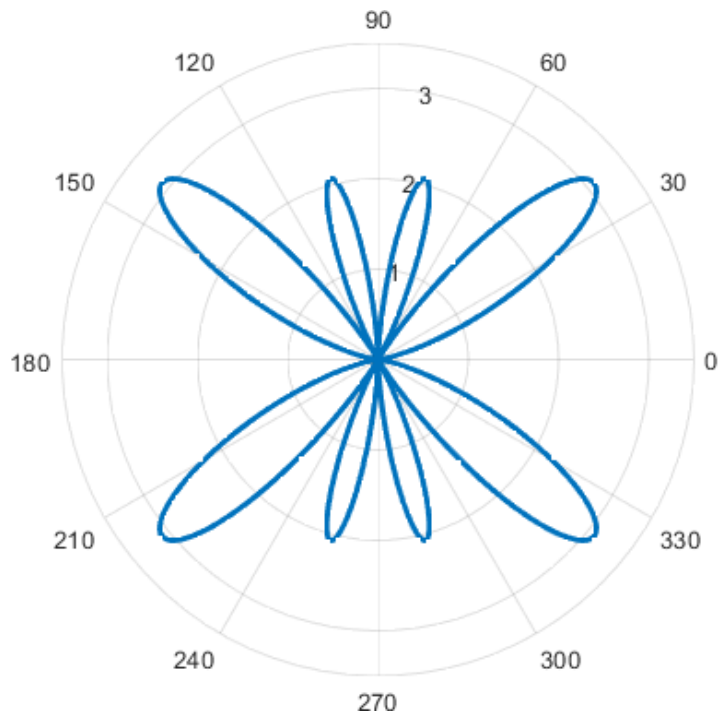


Dipolos Largos

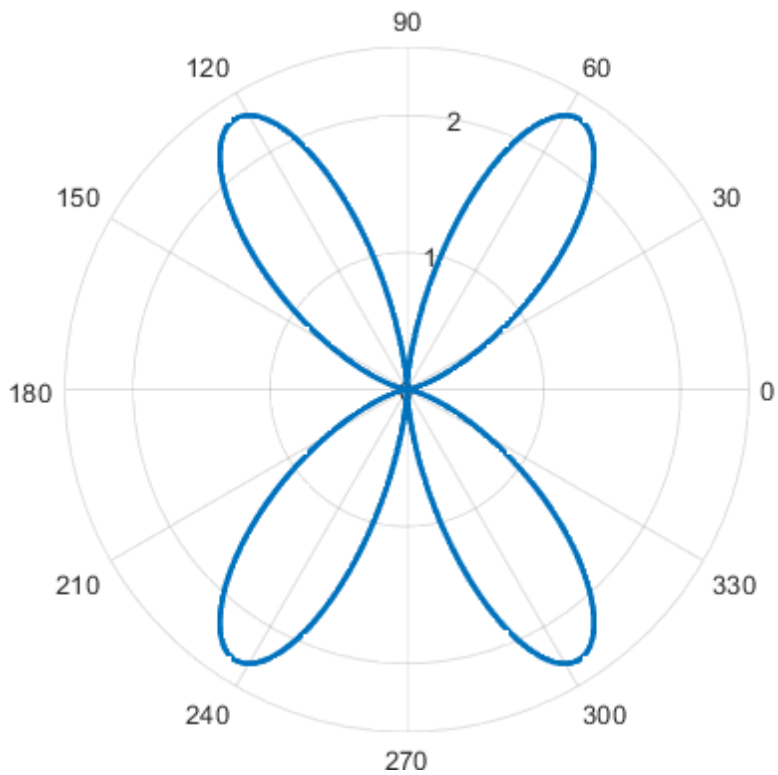
Cuatro landas

$$E = \frac{\cos(4 \cdot \pi \cdot \cos(\theta)) - 1}{\sin(\theta)}$$



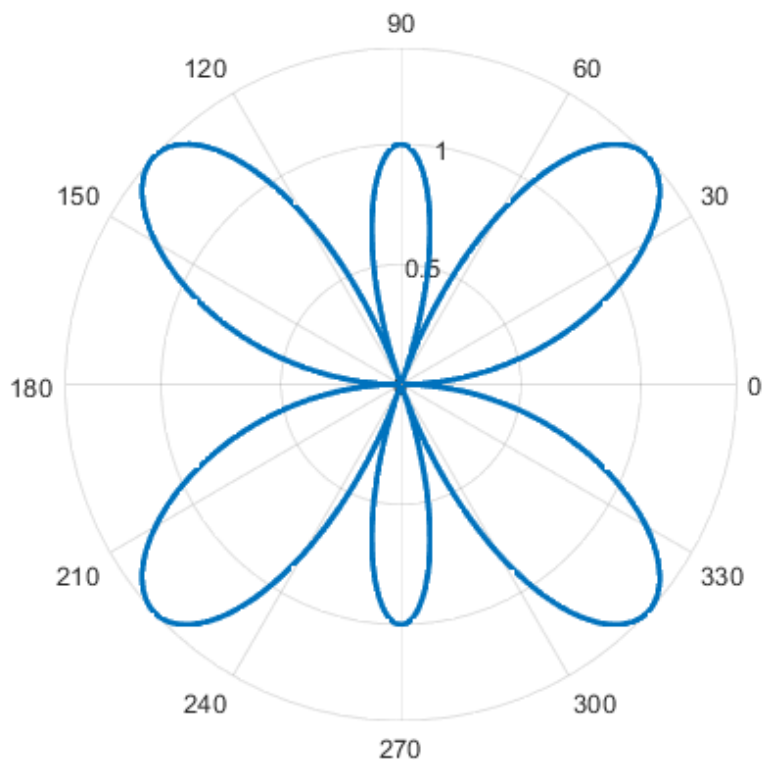
Dos Landa

$$E = \frac{\cos(2 \cdot \pi \cdot \cos(\theta)) - 1}{\sin(\theta)}$$



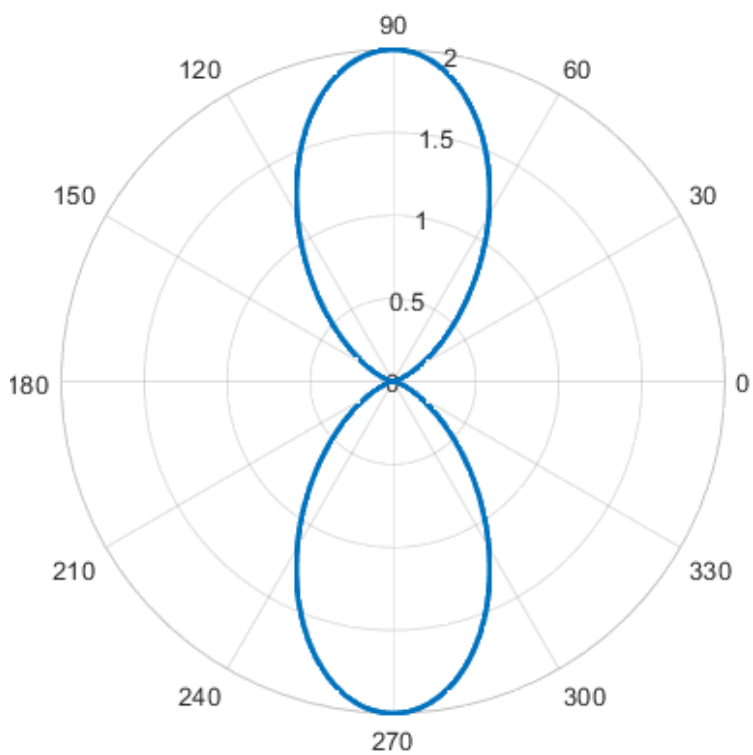
Tres Landa medios

$$E = \frac{\cos(1.5 \cdot \pi \cdot \cos(\theta))}{\sin(\theta)}$$



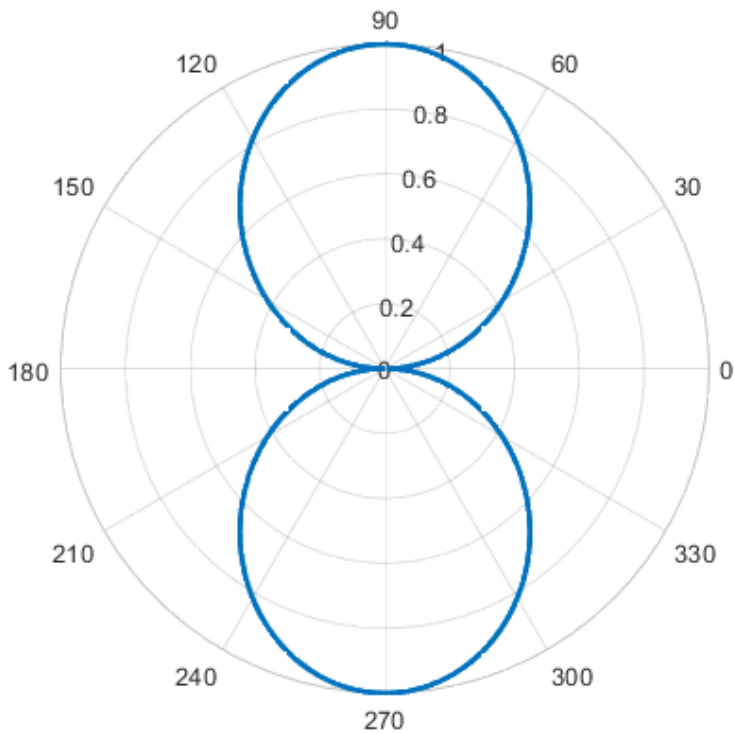
Landa

$$E = \frac{\cos(\pi \cdot \cos(\theta)) - 1}{\sin(\theta)}$$



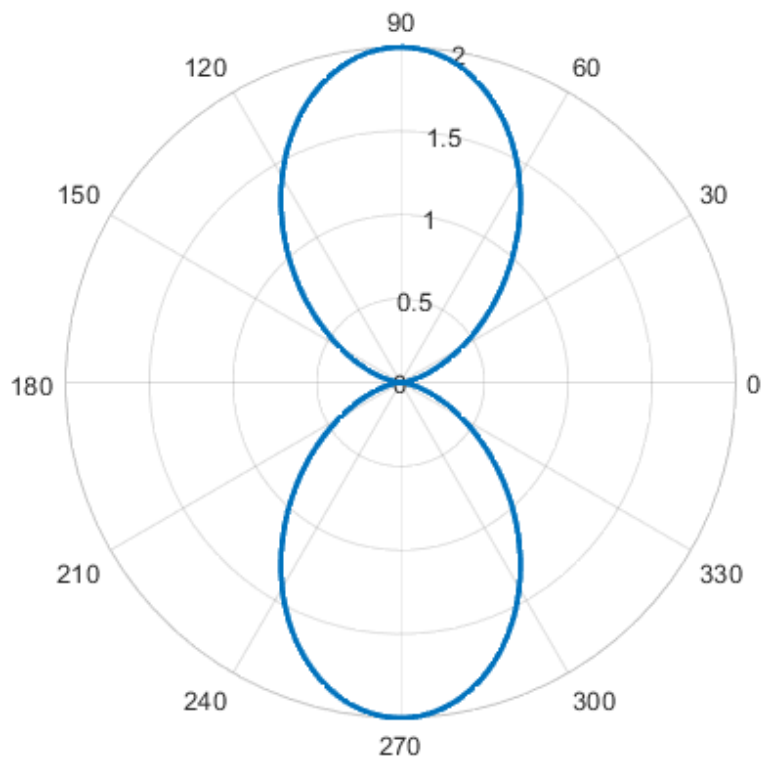
Landa medios

$$E = \frac{\cos(0.5 \cdot \pi \cdot \cos(\theta))}{\sin(\theta)}$$



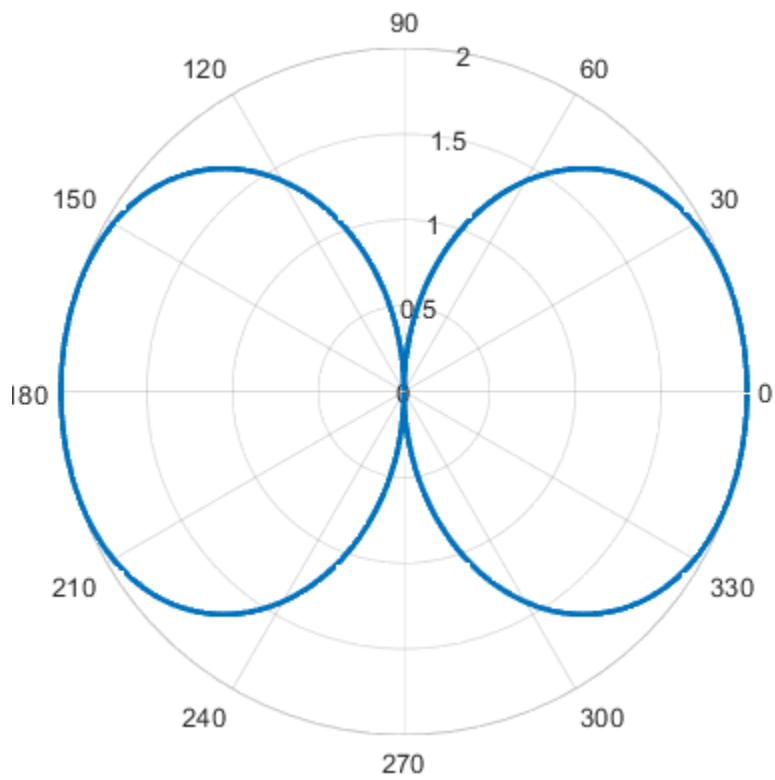
Dos antenas sin desfase eléctrico y punto de referencia el centro

$$E = 2 \cdot \cos(0.5 \cdot \pi \cdot (\cos(\theta)))$$



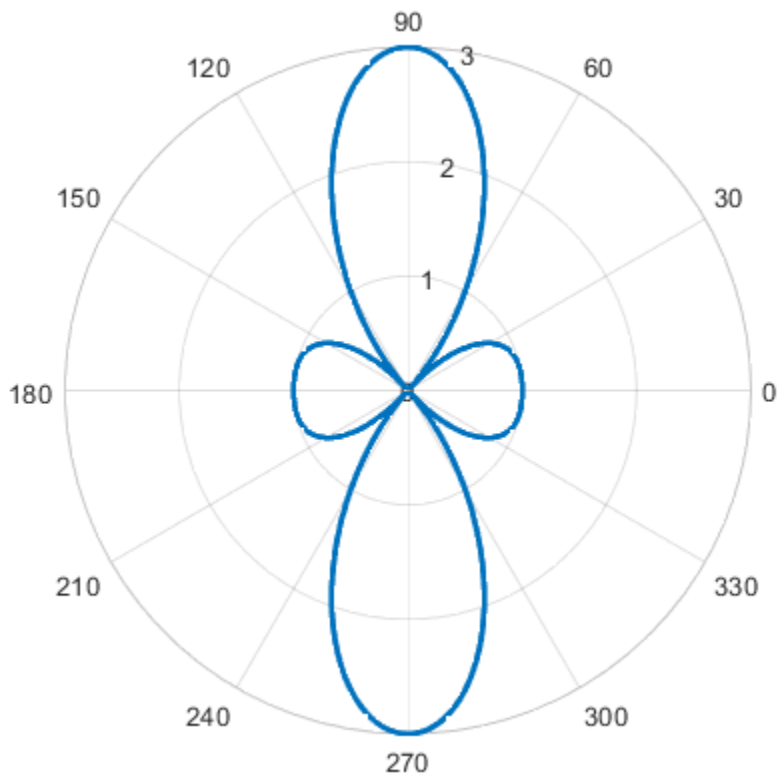
Dos antenas con desfase eléctrico 180° y punto de referencia el centro

$$E = 2 \cdot \cos(0.5 \cdot \pi \cdot (\cos(\theta) + 1))$$



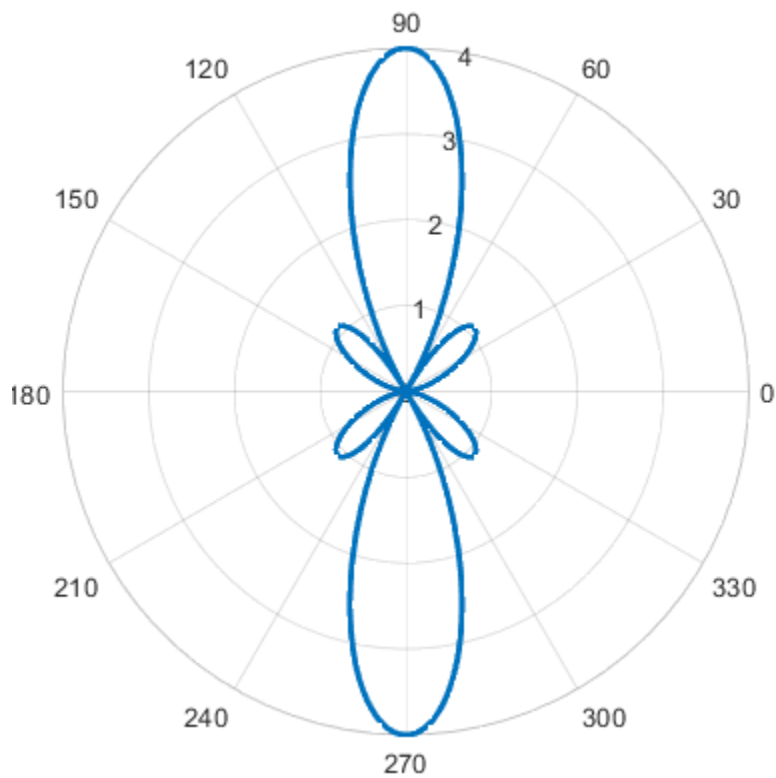
Tres antenas sin desfase eléctrico y punto de referencia el centro

$$E = 2 \cdot \cos(\pi \cdot \cos(\theta)) + 1$$



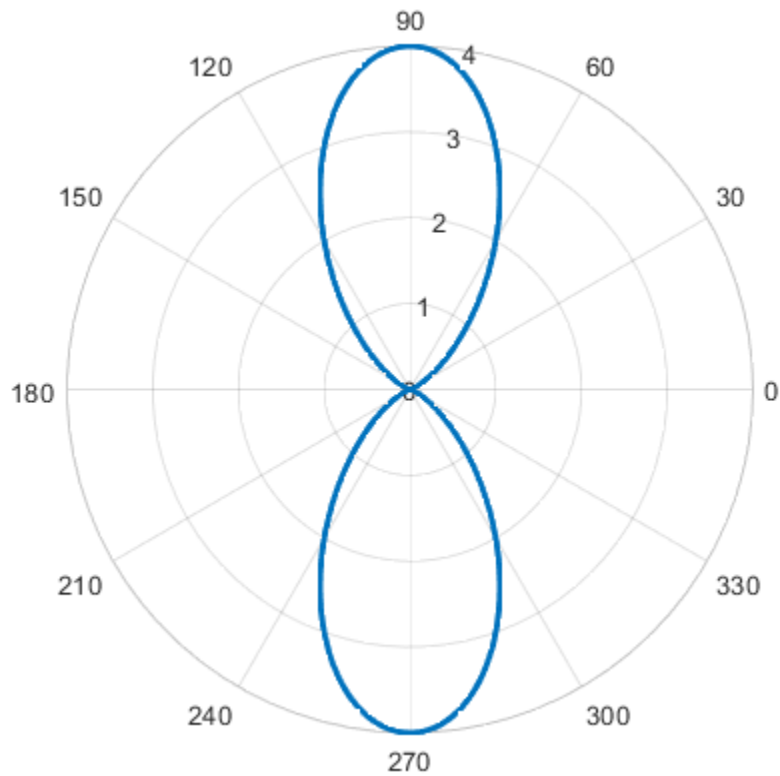
Cuatro antenas sin desfases y punto de referencia el centro

$$E = 2 \cdot (\cos(0.5 \cdot \pi \cdot \cos(\theta)) + \cos(1.5 \cdot \pi \cdot \cos(\theta)))$$



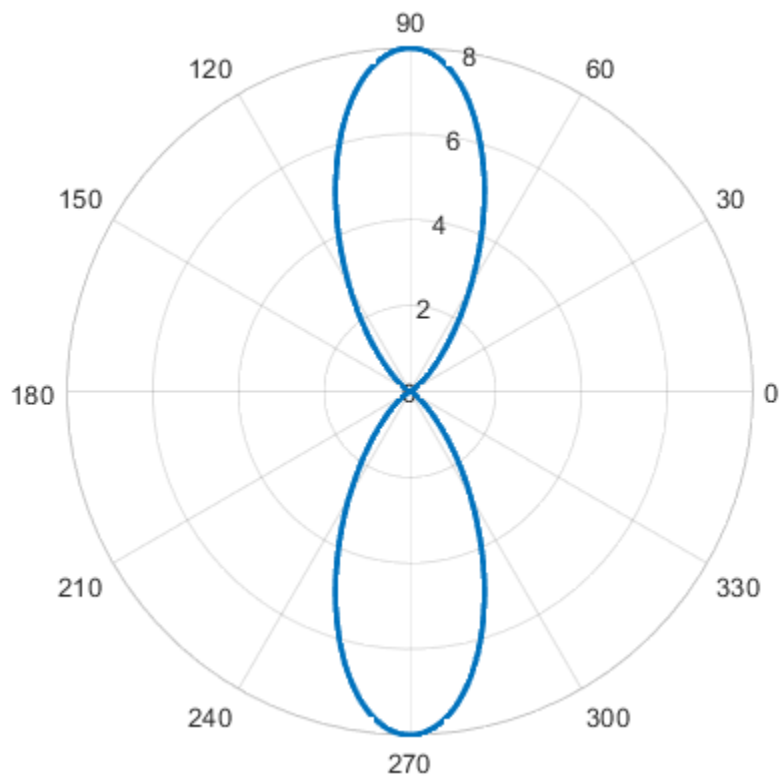
Tres antenas binomiales

$$E = 4 \cdot (\cos(0.5 \cdot \pi \cdot \cos(\theta)))^2$$



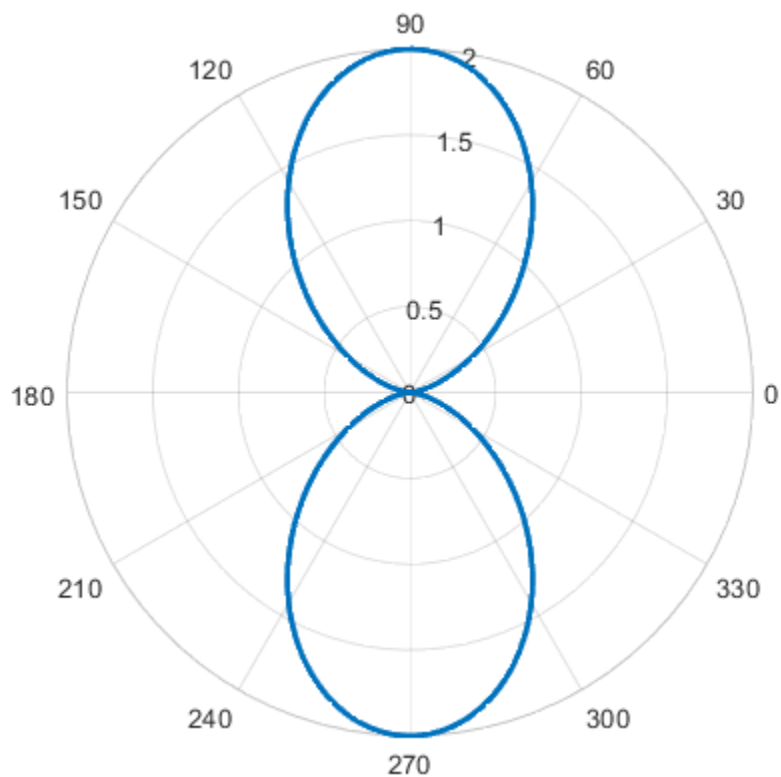
Cuatro Antenas Binomiales

$$E = 8 \cdot (\cos(0.5 \cdot \pi \cdot \cos(\theta)))^3$$



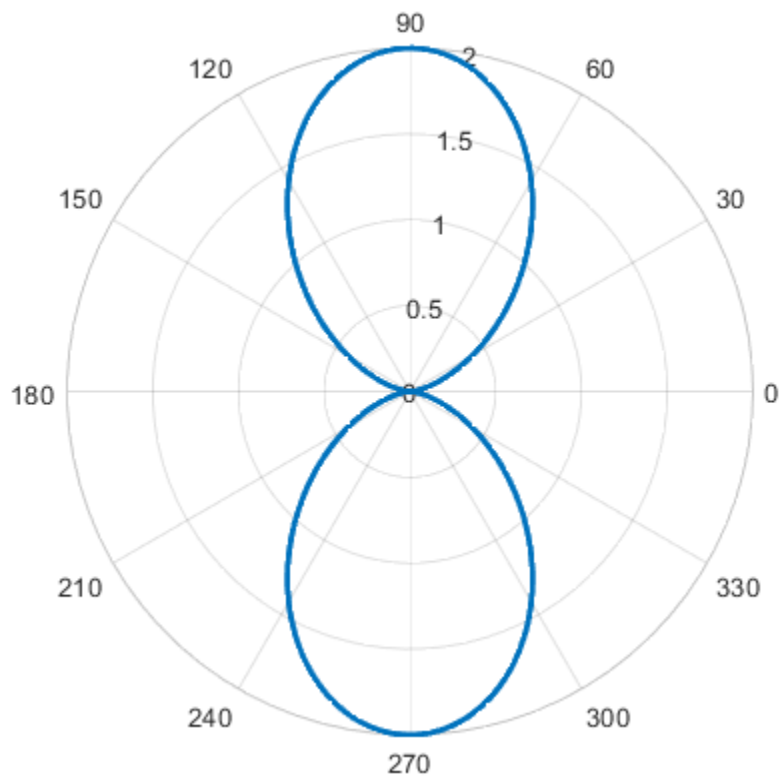
Dos Antenas Formando y punto de referencia formando Triangulo Rectángulo

$$E = e^{-1i \cdot \pi \cdot \cos(\frac{\pi}{2} - \theta)} + e^{1i \cdot \pi \cdot \sqrt{2} \cdot \cos(\frac{\pi}{4} + \theta)}$$



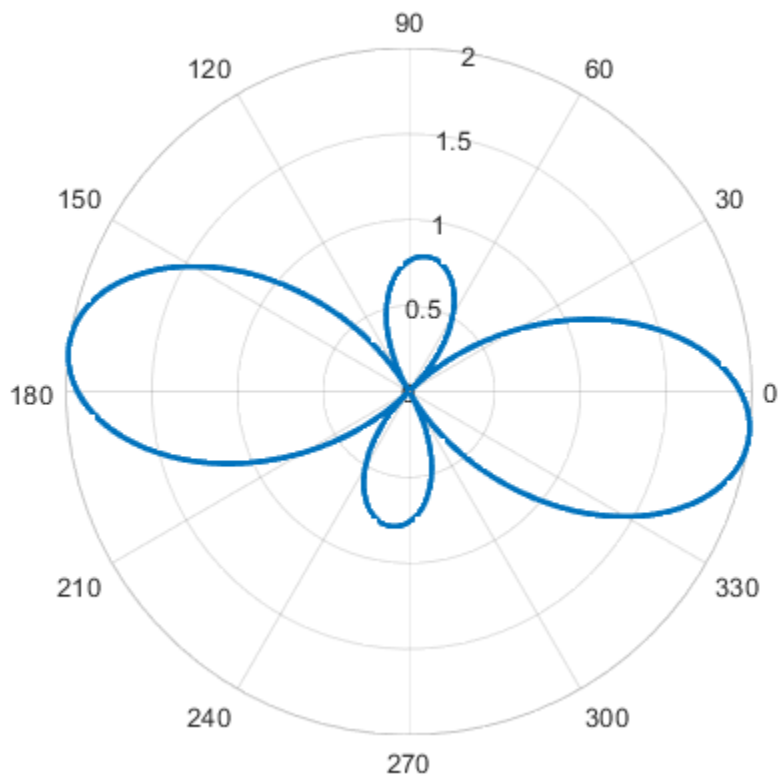
Dos Antenas Formando y punto de referencia formando un triángulo inclinado

$$E = e^{-1i \cdot \pi \cdot 0.5 \cdot \sqrt{2} \cdot \cos(\frac{\pi}{4} - \theta)} + e^{-1i \cdot \pi \cdot 0.5 \cdot \sqrt{2} \cdot \cos(\frac{3\pi}{4} - \theta)}$$



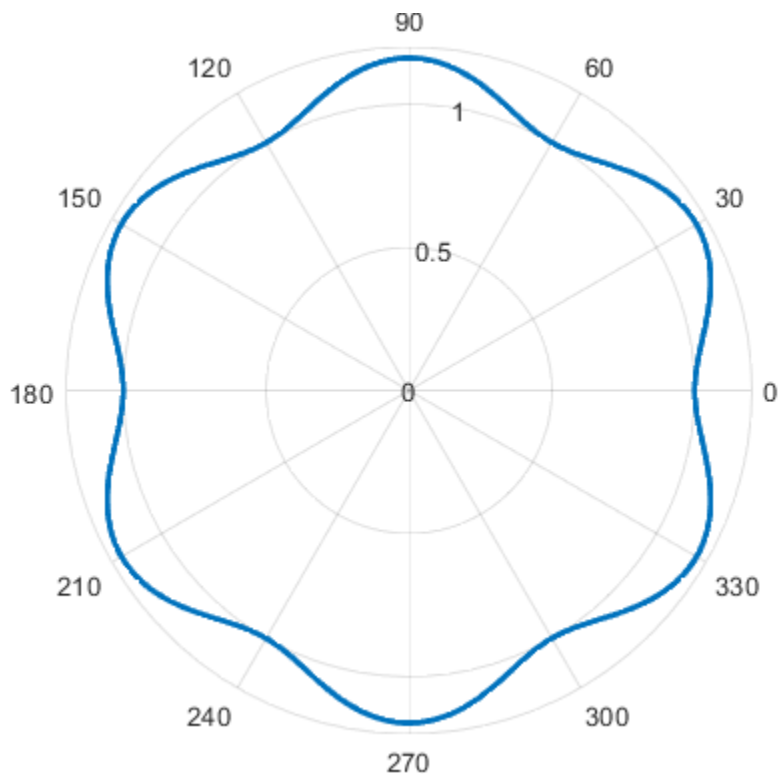
Trapecio con tres antenas y punto de referencia

$$E = e^{-1i \cdot \pi \cdot \cos(0.25 \cdot \pi - \theta)} + e^{-1i \cdot 0.765 \cdot \pi \cdot \cos(0.25 \cdot \pi + \theta)}$$



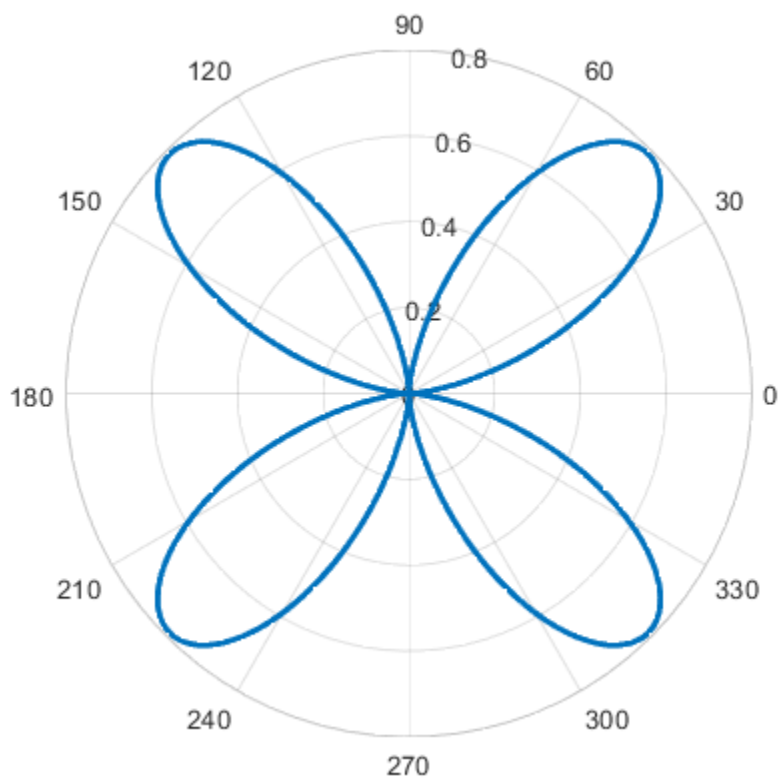
Triángulo Equilátero

$$E = e^{1i \cdot (\sqrt{3}/3 \cdot \pi \cdot \cos(0.5 \cdot \pi - \theta))} + e^{-1i \cdot (\sqrt{3}/3 \cdot \pi \cdot \cos(\frac{\pi}{6} - \theta))} + e^{1i \cdot (\sqrt{3}/3 \cdot \pi \cdot \cos(\frac{\pi}{6} + \theta))}$$



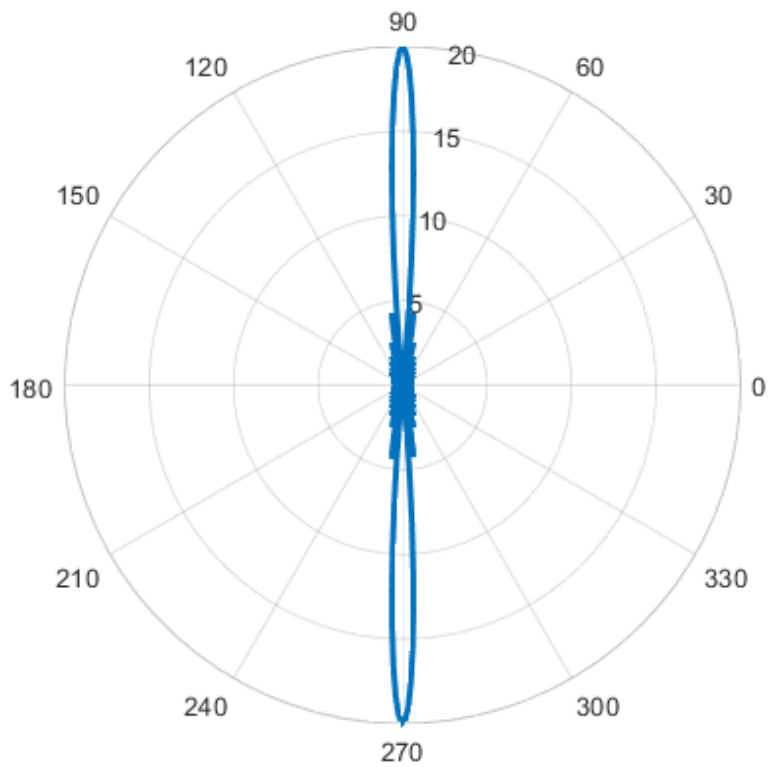
4 antenas – Multiplicación de patrones

$$E = 4 \cdot \cos(0.5(\theta + 0.5\pi)) \cdot \cos(0.5\pi \cdot \cos(\theta))$$



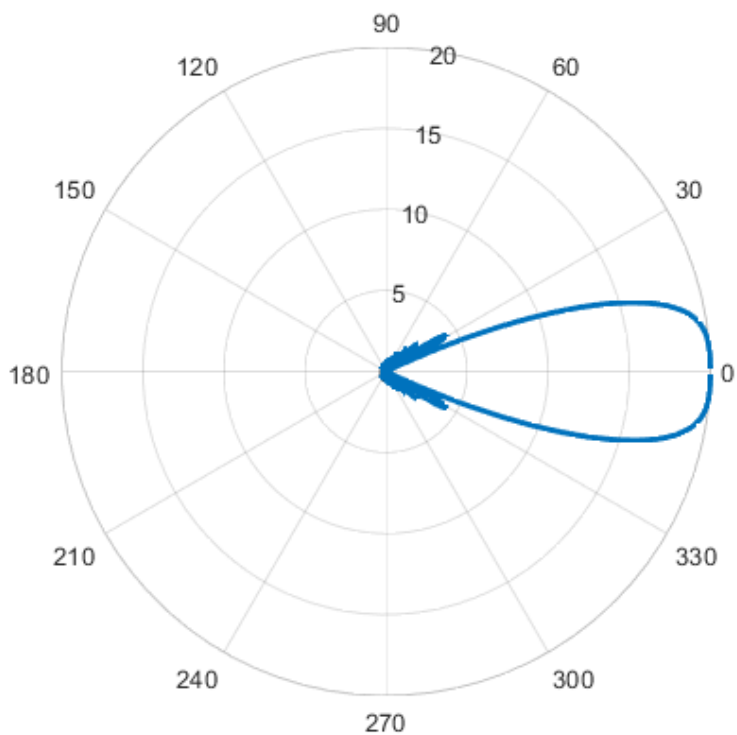
20 antenas Lineales orientado a 90°

$$E = \frac{20 \cdot \sin\left(\frac{20}{2} \cdot \pi \cdot \cos(\theta)\right)}{\frac{20}{2} \cdot \pi \cdot \cos(\theta)}$$



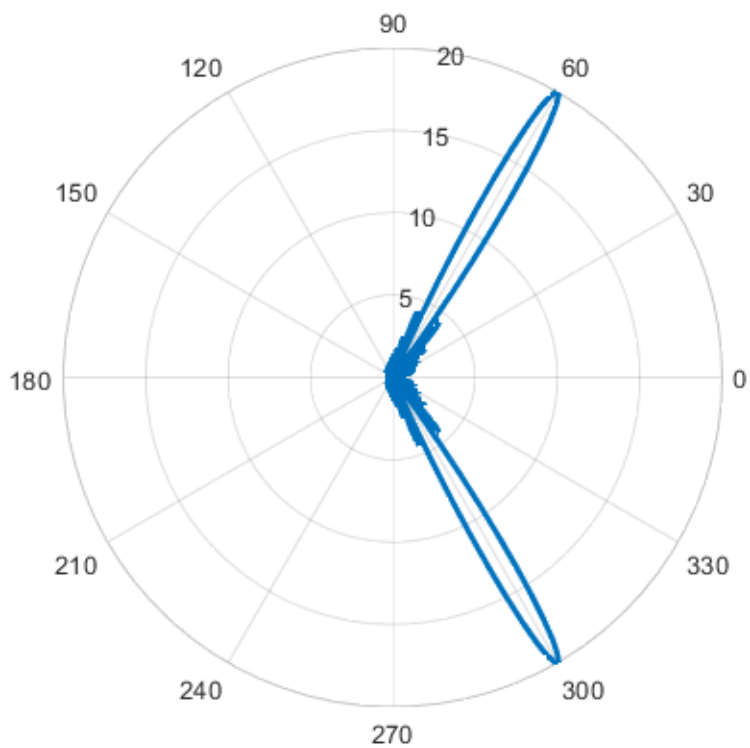
20 antenas Lineales orientado a 0°

$$E = \frac{20 \cdot \sin\left(\frac{20}{2} \cdot \pi \cdot \cos(\theta) + 10 \cdot \pi\right)}{\frac{20}{2} \cdot \pi \cdot \cos(\theta) + 10 \cdot \pi}$$

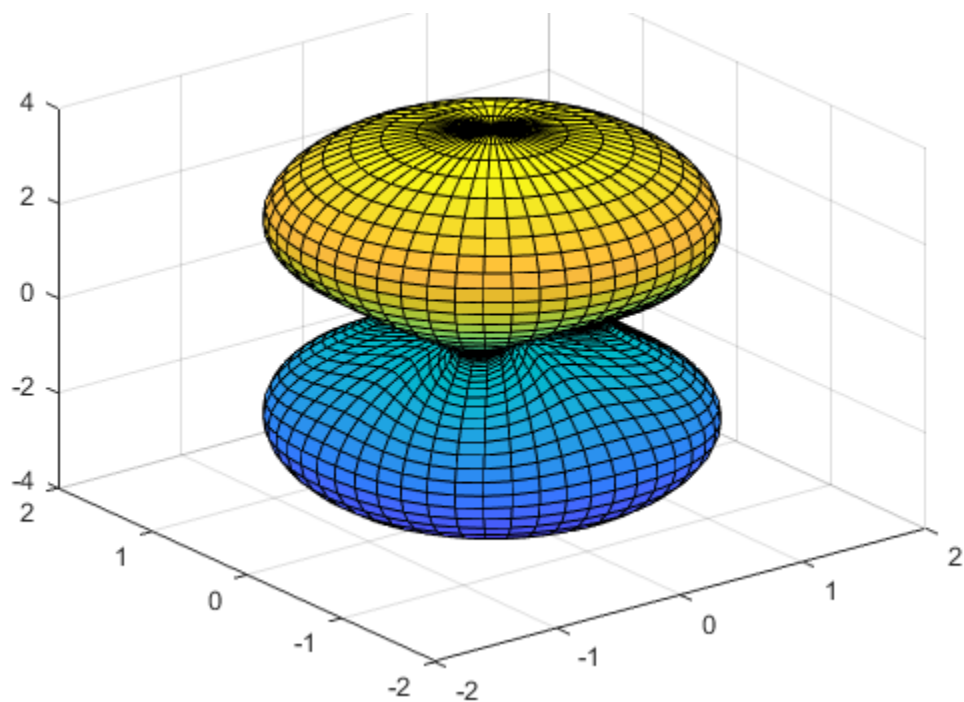


20 antenas Lineales orientado a 60°

$$E = \frac{20 \cdot \sin \left(\frac{20}{2} \cdot \pi \cdot \cos(\theta) + 5 \cdot \pi \right)}{\frac{20}{2} \cdot \pi \cdot \cos(\theta) + 5 \cdot \pi}$$



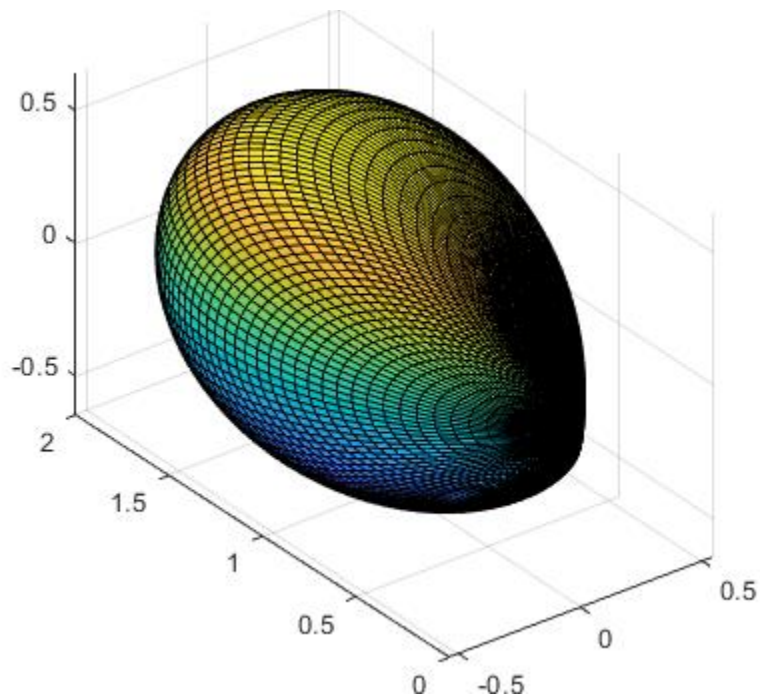
Cuatro Antenas haciendo un Cuadrado



Corner Reflector

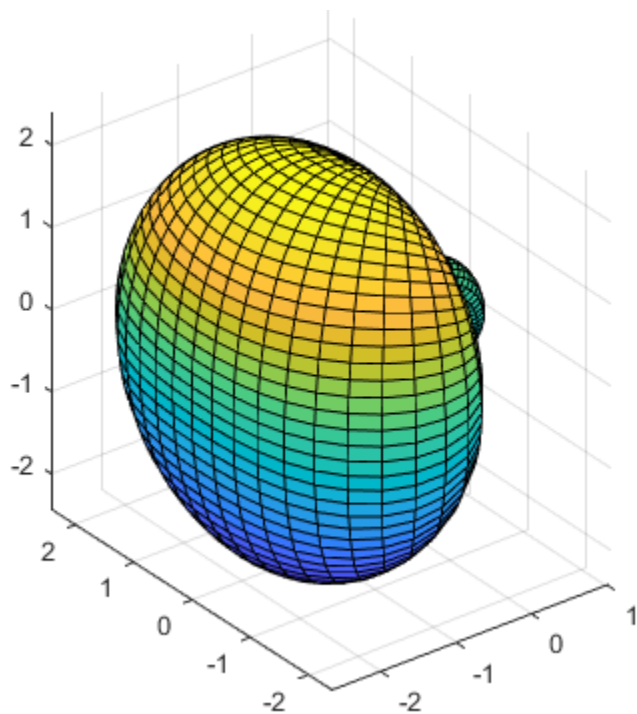
$$E0 = \frac{\cos(0.5 \cdot \pi \cdot \cos(\theta))}{\sin(\theta)}$$

$$E = E0 \cdot e^{i \cdot (0.5 \cdot \pi) \cdot \sin(\theta) \cdot \cos(\varphi)} + E0 \cdot e^{i \cdot (0.5 \cdot \pi) \cdot \sin(\theta) \cdot \cos(\varphi - 0.5 \cdot \pi) + (i \cdot \pi)} + E0 \cdot e^{i \cdot (0.5 \cdot \pi) \cdot \sin(\theta) \cdot \cos(\varphi - \pi)} + E0 \cdot e^{i \cdot (0.5 \cdot \pi) \cdot \sin(\theta) \cdot \cos(\varphi - 1.5 \cdot \pi) + (i \cdot \pi)}$$



Log Periódica

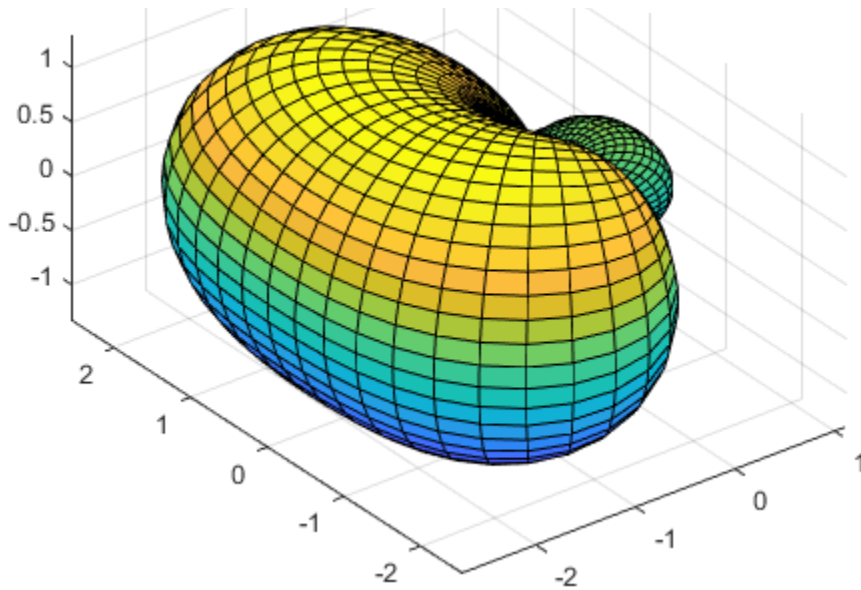
$$E = Ea \cdot e^{i \cdot (0.5 \cdot \pi) \cdot \sin(\theta) \cdot \cos(\varphi) + (i \cdot 0.5 \cdot \pi) + (i \cdot \pi)} + Eb \cdot e^{i \cdot (0.916 \cdot \pi) \cdot \sin(\theta) \cdot \cos(\varphi) + (0.916 \cdot \pi \cdot i)} + Ec \cdot e^{i \cdot (1.26 \cdot \pi) \cdot \sin(\theta) \cdot \cos(\varphi) + (i \cdot 1.26 \cdot \pi) + (i \cdot \pi)} + Ed \cdot e^{i \cdot (0.6 \cdot \pi) \cdot \sin(\theta) \cdot \cos(\varphi - \pi) - (i \cdot 0.6 \cdot \pi) + (i \cdot \pi)} + Ee$$



Log Periódica con diferentes antenas

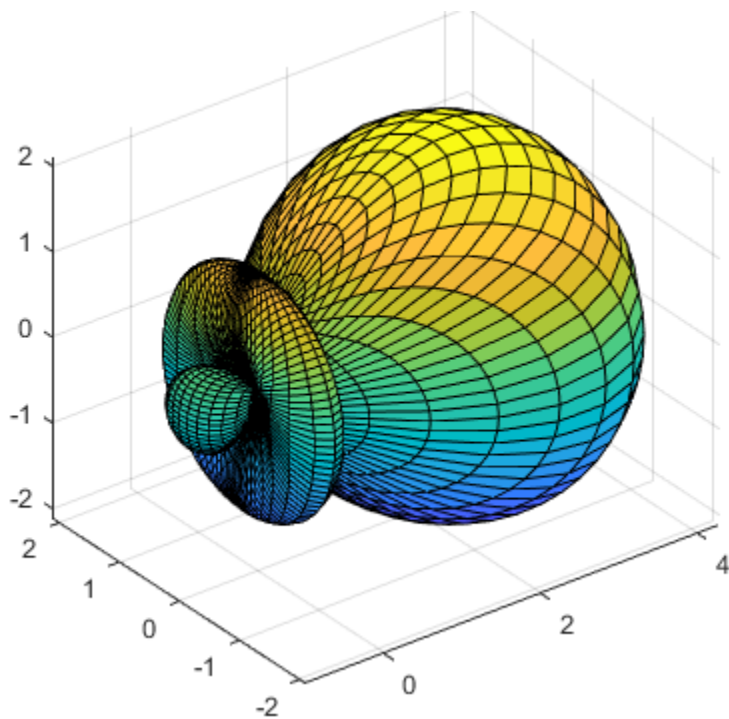
$$E_0 = \frac{\cos(0.5 \cdot \pi \cdot \cos(\theta))}{\sin(\theta)}$$

$$E = E_a \cdot e^{i \cdot (0.5 \cdot \pi) \cdot \sin(\theta) \cdot \cos(\varphi) + (i \cdot 0.5 \cdot \pi) + (i \cdot \pi)} + E_b \cdot e^{i \cdot (0.916 \cdot \pi) \cdot \sin(\theta) \cdot \cos(\varphi) + (0.916 \cdot \pi \cdot i)} + E_c \cdot e^{i \cdot (1.26 \cdot \pi) \cdot \sin(\theta) \cdot \cos(\varphi) + (i \cdot 1.26 \cdot \pi) + (i \cdot \pi)} + E_d \cdot e^{i \cdot (0.6 \cdot \pi) \cdot \sin(\theta) \cdot \cos(\varphi - \pi) - (i \cdot 0.6 \cdot \pi) + (i \cdot \pi)} + E_e$$



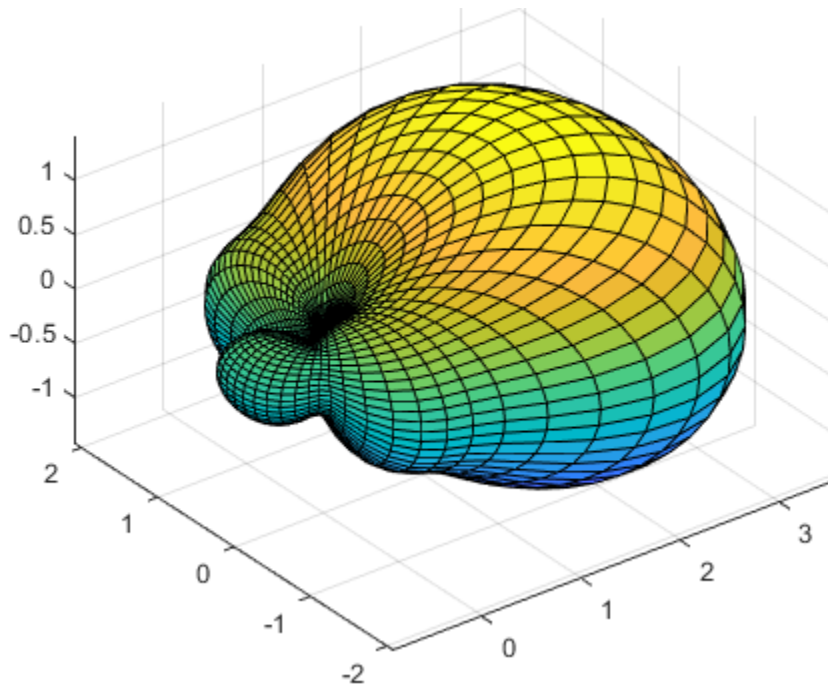
Log Periódica

$$E = E_a \cdot e^{i \cdot (0.5 \cdot \pi) \cdot \sin(\theta) \cdot \cos(\varphi) + (i \cdot 0.5 \cdot \pi) + (i \cdot \pi)} + E_b \cdot e^{i \cdot (0.916 \cdot \pi) \cdot \sin(\theta) \cdot \cos(\varphi) + (0.916 \cdot \pi \cdot i)} + E_c \cdot e^{i \cdot (1.26 \cdot \pi) \cdot \sin(\theta) \cdot \cos(\varphi) + (i \cdot 1.26 \cdot \pi) + (i \cdot \pi)} + E_d \cdot e^{i \cdot (0.6 \cdot \pi) \cdot \sin(\theta) \cdot \cos(\varphi - \pi) - (i \cdot 0.6 \cdot \pi) + (i \cdot \pi)} + E_e$$



Log Periódica Con diferentes antenas

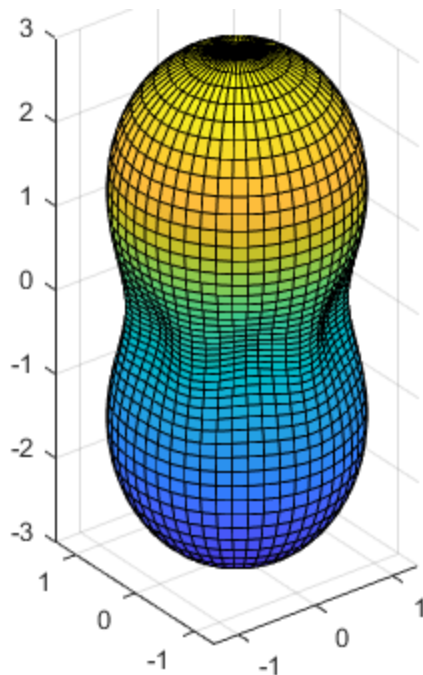
$$E = Ea \cdot e^{i \cdot (0.5 \cdot \pi) \cdot \sin(\theta) \cdot \cos(\varphi) + (i \cdot 0.5 \cdot \pi) + (i \cdot \pi)} + Eb \cdot e^{i \cdot (0.916 \cdot \pi) \cdot \sin(\theta) \cdot \cos(\varphi) + (0.916 \cdot \pi \cdot i)} + Ec \cdot e^{i \cdot (1.26 \cdot \pi) \cdot \sin(\theta) \cdot \cos(\varphi) + (i \cdot 1.26 \cdot \pi) + (i \cdot \pi)} + Ed \cdot e^{i \cdot (0.6 \cdot \pi) \cdot \sin(\theta) \cdot \cos(\varphi - \pi) - (i \cdot 0.6 \cdot \pi) + (i \cdot \pi)} + Ee$$



Triángulo Equilátero Direccionado 0°

$$E0 = \frac{\cos(0.5 \cdot \pi \cdot \cos(\theta))}{\sin(\theta)}$$

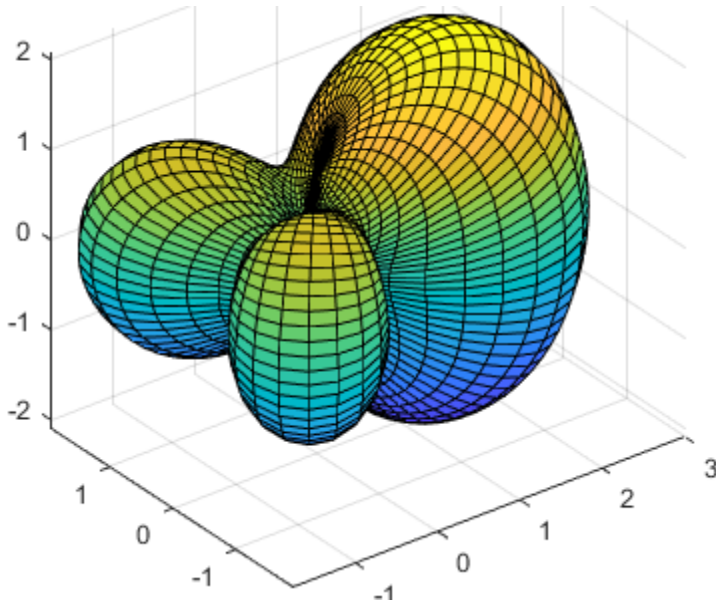
$$E = E0 \cdot e^{i \cdot (\pi / (\sqrt{3}) \cdot \sin(\theta) \cdot \cos(\varphi - 0.5 \cdot \pi))} + E0 \cdot e^{i \cdot (\pi / \sqrt{3} \cdot \sin(\theta) \cdot \cos(\varphi + (\pi/6)))} + E0 \cdot e^{i \cdot (\pi / \sqrt{3} \cdot \sin(\theta) \cdot \cos(\varphi + (5 \cdot \pi/6)))}$$



Triángulo Equilátero Direccionado 90°

$$E0 = \frac{\cos(0.5 \cdot \pi \cdot \cos(\theta))}{\sin(\theta)}$$

$$E = E0 \cdot e^{i \cdot (\pi / (\sqrt{3}) \cdot \sin(\theta) \cdot \cos(\varphi - 0.5 \cdot \pi))} + E0 \cdot e^{i \cdot (\pi / \sqrt{3} \cdot \sin(\theta) \cdot \cos(\varphi + (\pi/6) + (-0.5 \cdot \pi \cdot i))} + E0 \cdot e^{i \cdot (\pi / \sqrt{3} \cdot \sin(\theta) \cdot \cos(\varphi + (5 \cdot \pi/6) + (0.5 \cdot i \cdot \pi))}$$



Yagi

$$E0 = \frac{\cos(0.5 \cdot \pi \cdot \cos(\theta))}{\sin(\theta)}$$

$$E = E0 \cdot e^{(0.375i \cdot \pi) \cdot \sin(\theta) \cdot \cos(\varphi - \pi) + (0.375i \cdot \pi) + (0.5i \cdot \pi)} + E0 \cdot e^{(0.25i \cdot \pi) \cdot \sin(\theta) \cdot \cos(\varphi) + (0.25i \cdot \pi) - (0.5i \cdot \pi)} + E0 \cdot e^{(0.5i \cdot \pi) \cdot \sin(\theta) \cdot \cos(\varphi) + (0.5i \cdot \pi) - (0.5i \cdot \pi)} + E0 \cdot e^{(0.75i \cdot \pi) \cdot \sin(\theta) \cdot \cos(\varphi) + (0.75i \cdot \pi) - (0.5i \cdot \pi)} + E0 \cdot e^{(1.5i \cdot \pi) \cdot \sin(\theta) \cdot \cos(\varphi) + (1.5i \cdot \pi) - (0.5i \cdot \pi)} + E0 \cdot e^{(1.75i \cdot \pi) \cdot \sin(\theta) \cdot \cos(\varphi) + (1.75i \cdot \pi) - (0.5i \cdot \pi)} + E0 \cdot e^{(2i \cdot \pi) \cdot \sin(\theta) \cdot \cos(\varphi) + (2i \cdot \pi) - (0.5i \cdot \pi)} + E0$$

