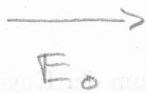


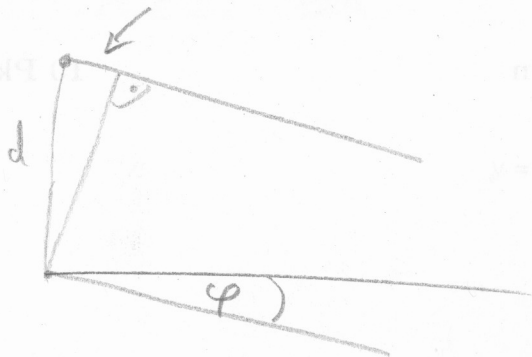
$$d = 1,5 \text{ cm} \quad f = 30 \text{ GHz}$$

$$\Rightarrow \lambda = 1 \text{ cm}$$

Phasendifferenz



$$\sin \varphi d = \Delta s$$

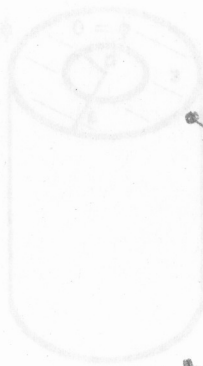
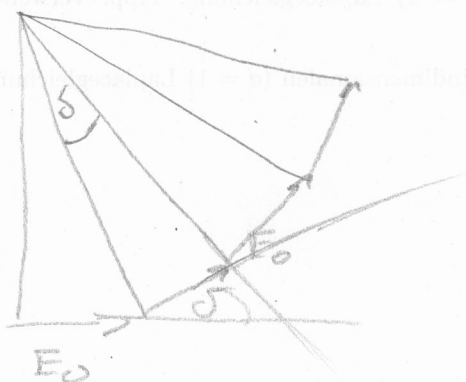


$$\frac{\Delta s}{\lambda} = 2\pi \delta$$

$$\sin \varphi d = \frac{1}{2\pi} \delta \lambda$$

$$\delta = 2\pi \frac{d}{\lambda} \sin \varphi$$

Dann addiere ich im Phasendiagramm



Gerthsen

S. 539

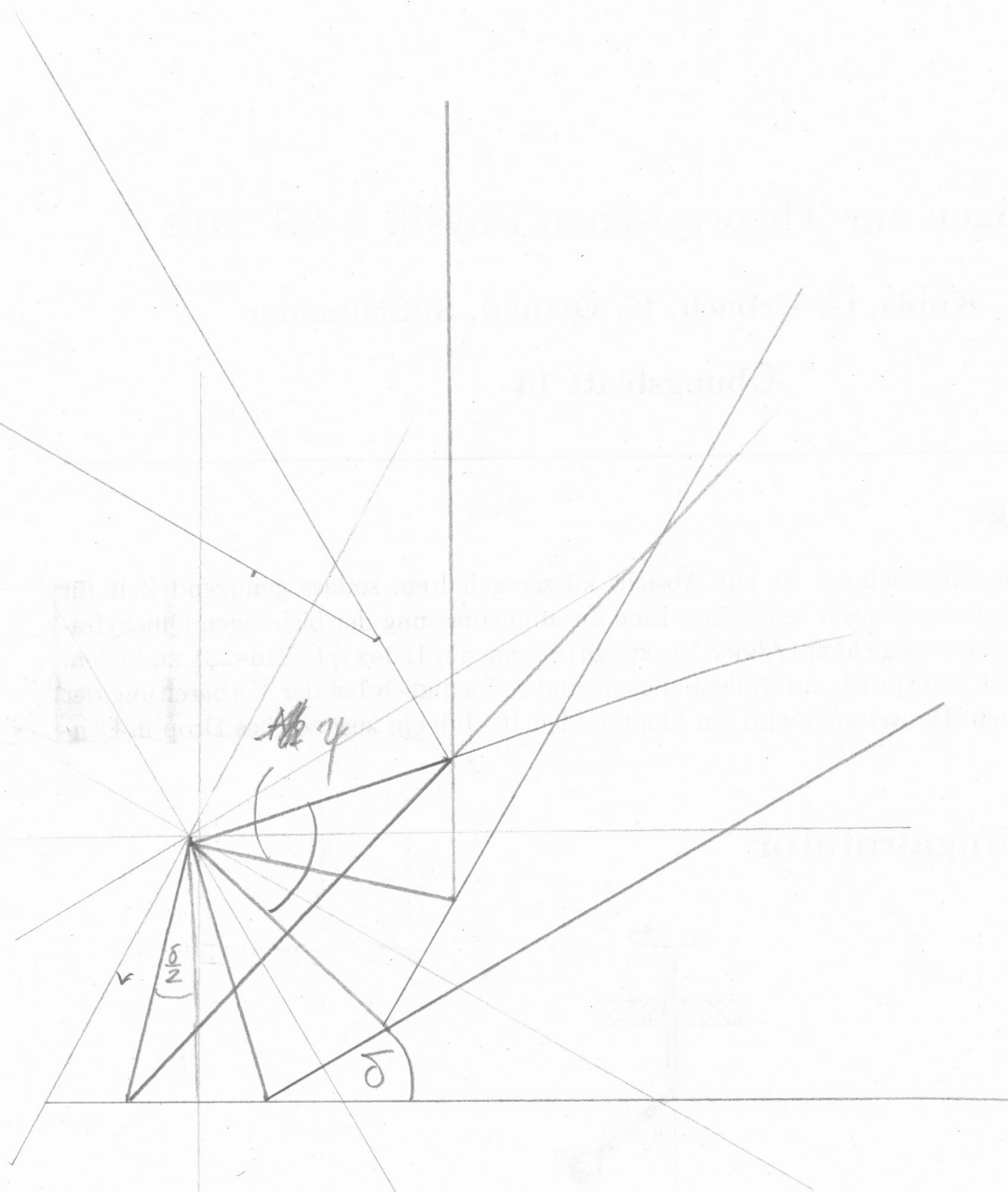
Abchnitt 11.3

Quadrat

08.09.11.2013

$\sin \delta$

A'



$$\sin\left(\frac{\delta}{2}\right) = \frac{A/2}{r} \quad \Leftrightarrow \quad r = \frac{A}{2} \csc\left(\frac{\delta}{2}\right)$$

$$\sin(\psi) = \frac{A/2}{r} = \frac{A}{2r} \quad \psi = \frac{N\delta}{2}$$

$$\sin\left(\frac{N\delta}{2}\right) = \frac{A}{2r} = \frac{A}{A'} \csc\left(\frac{\delta}{2}\right)$$

$$\sin\left(\frac{N\delta}{2}\right) = \frac{A}{A'} \sin\left(\frac{\delta}{2}\right)$$

$$A = A' \sin\left(\frac{N\delta}{2}\right) \sin\left(\frac{\delta}{2}\right)$$

$$\delta = 2\pi \frac{d}{\lambda} \sin \varphi$$

$$A = A' \frac{\sin\left(\frac{N\pi d}{\lambda} \sin \varphi\right)}{\sin\left(\frac{d\pi}{\lambda} \sin \varphi\right)} \quad n=4$$

Dies plotten.

Maxima wenn $\frac{dN\pi}{\lambda} \sin \varphi = \left(n + \frac{1}{2}\right)\pi$

$$\frac{dN}{\lambda} \sin \varphi = n + \frac{1}{2}$$

$$\frac{4d}{\lambda} \sin \varphi = n + \frac{1}{2}$$

Maximum wenn $\text{Nenner} = 0$?

$$\frac{d\pi}{\lambda} \sin \varphi = m\pi$$

$$\sin \varphi = m \frac{\lambda}{d}$$

Minimum wenn Zähler gleich

0 und Nenner nicht.

$$\sin \varphi = \frac{m \lambda}{N d}$$

aber ~~$m \bmod N \neq 0$~~

$$\frac{m}{N} \notin \mathbb{Z}$$