

Aperturantennen

by Thomas Zwick

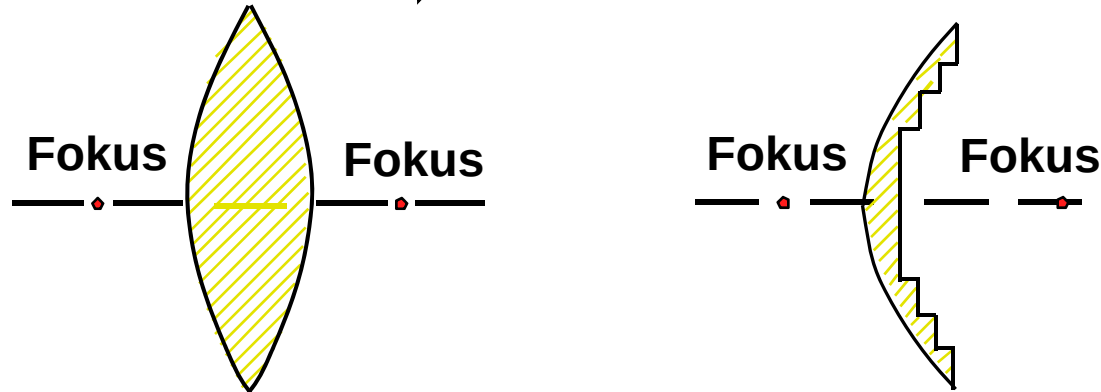
INSTITUT FÜR HOCHFREQUENZTECHNIK UND ELEKTRONIK



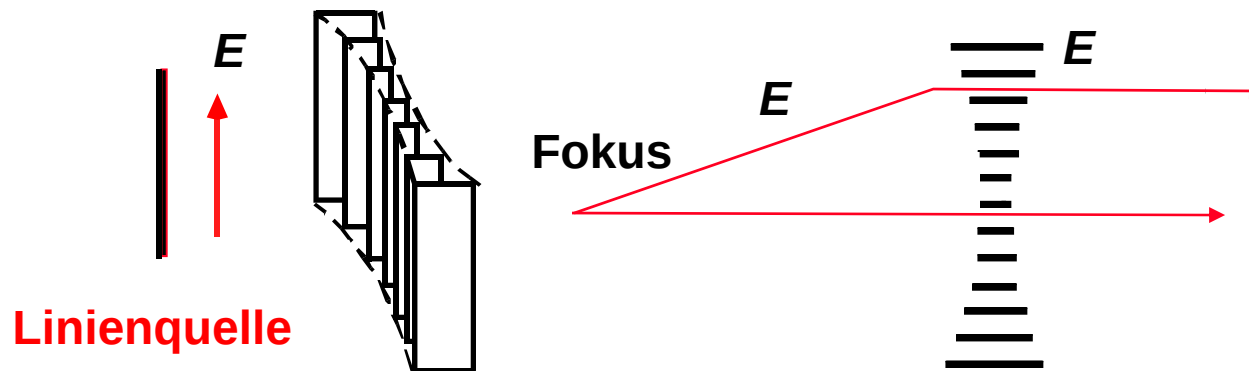
- Patch-Antennen
- Hornantennen
- Reflektorantennen
- **Linsenantennen**
- Dielektrische Antennen

Übersicht über Linsenantennen

$n > 1$ → Verzögerungslinsen



$n < 1$ → Beschleunigungslinsen

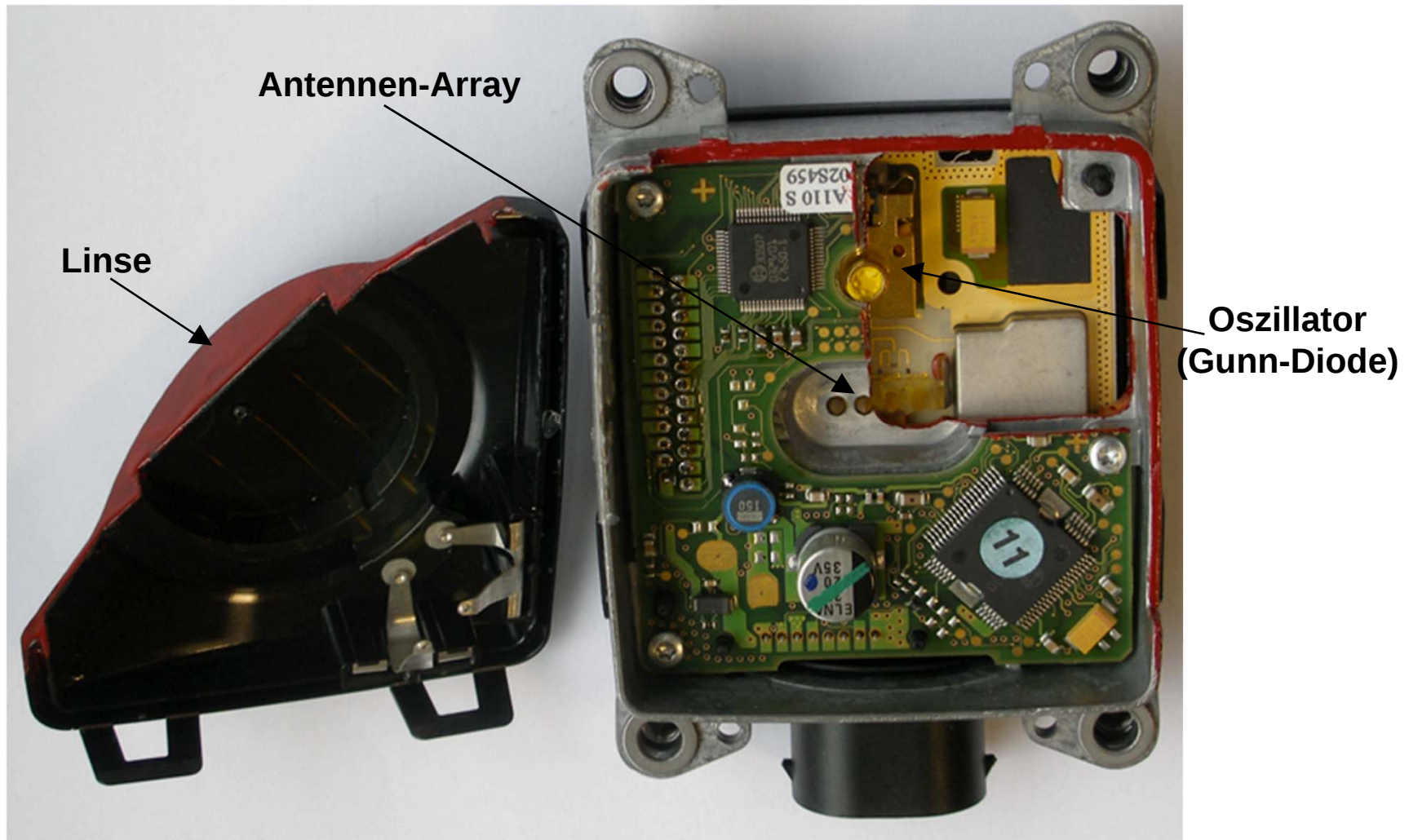


Bosch ACC Radar



**Courtesy
Bosch**

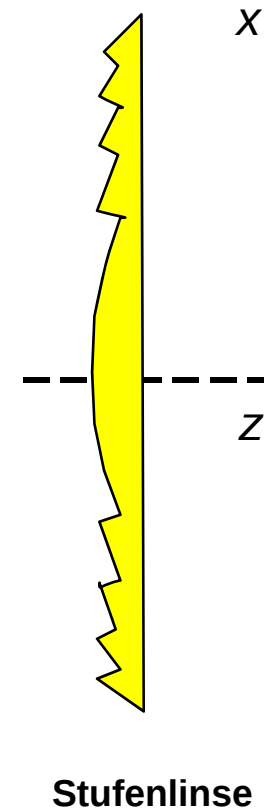
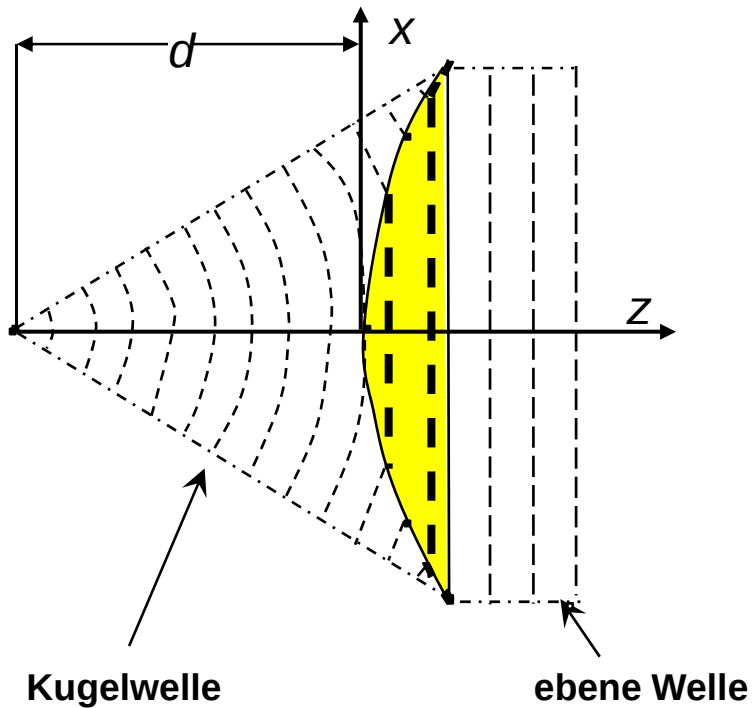
Bosch ACC Radar - Antennensystem



Courtesy Bosch

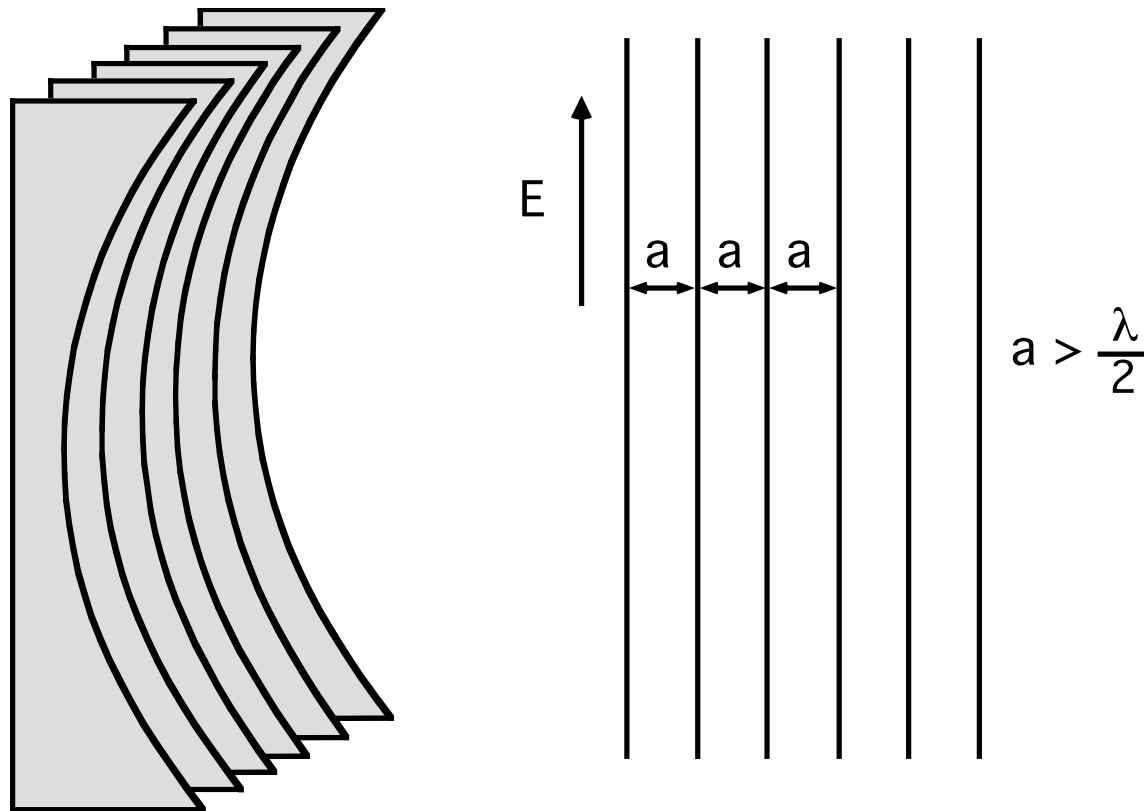
Homogene dielektrische Linse

$n > 1$  Verzögerungslinse



Aufbau einer Parallelplatten-Linse

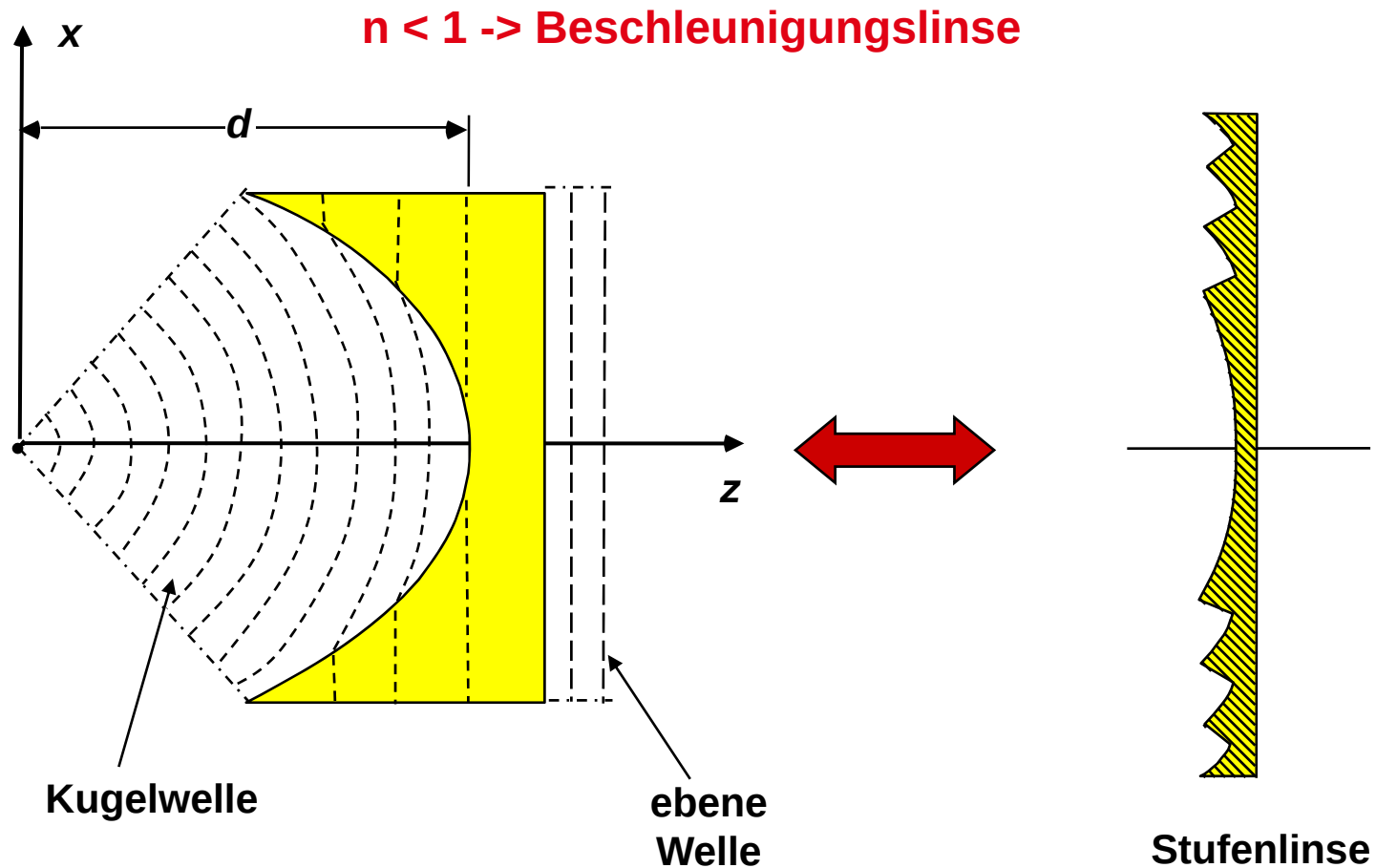
$n < 1 \rightarrow$ Beschleunigungslinse



Erste Parallelplattenlinse von J. Bosc in 1895



Parallelplatten-Linse

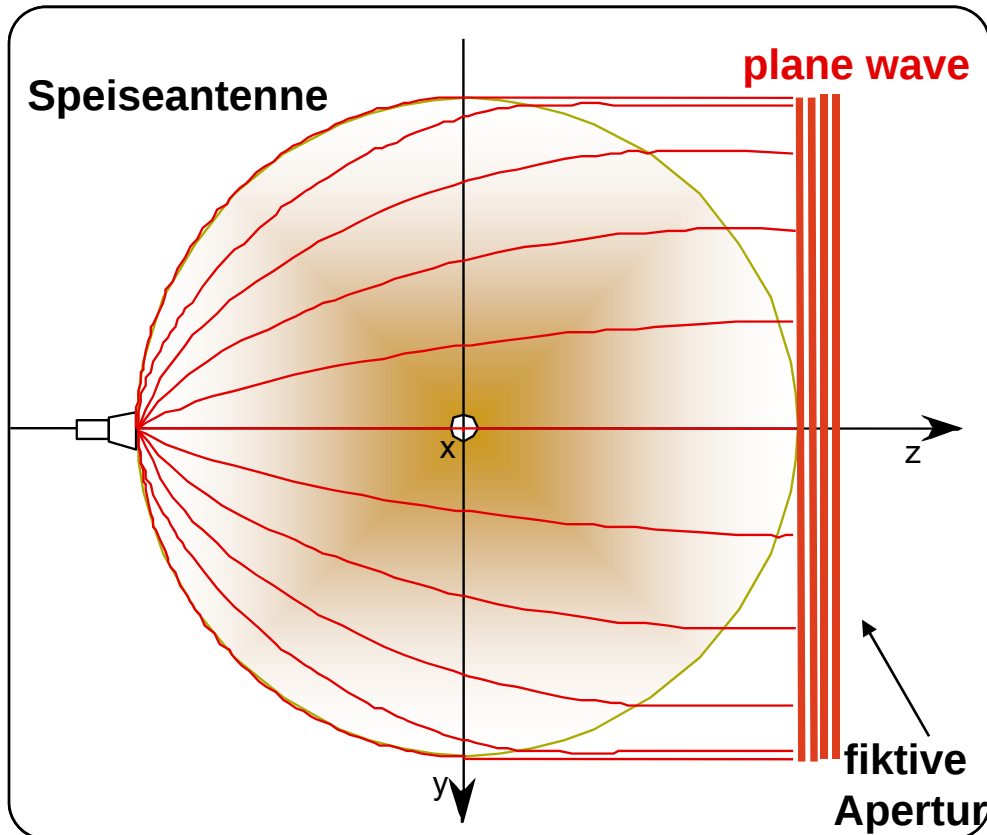


Hohlleiter Linsenantenne ($f = 15 \text{ GHz}$)

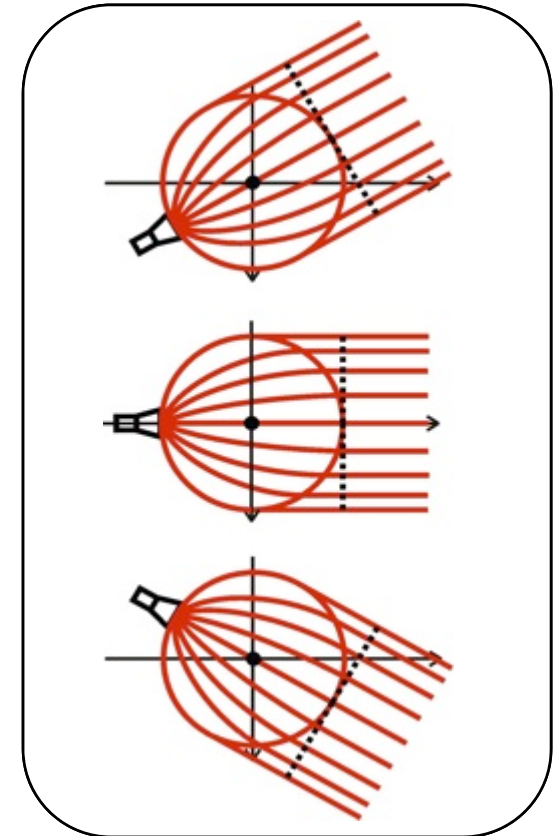


Strahlenoptische Betrachtung der Luneburg-Linse

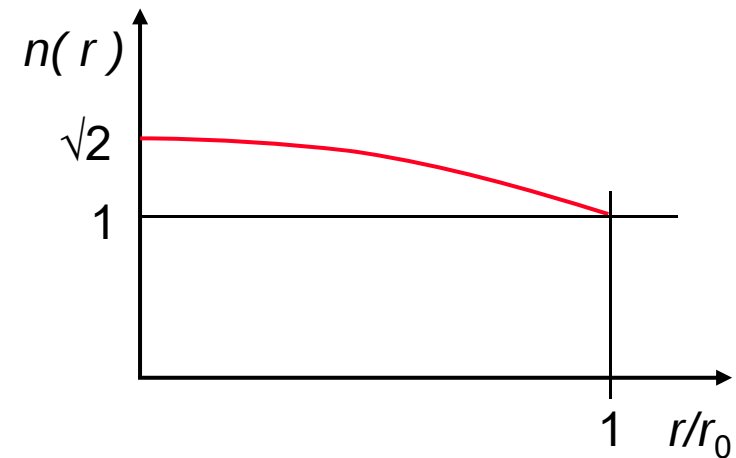
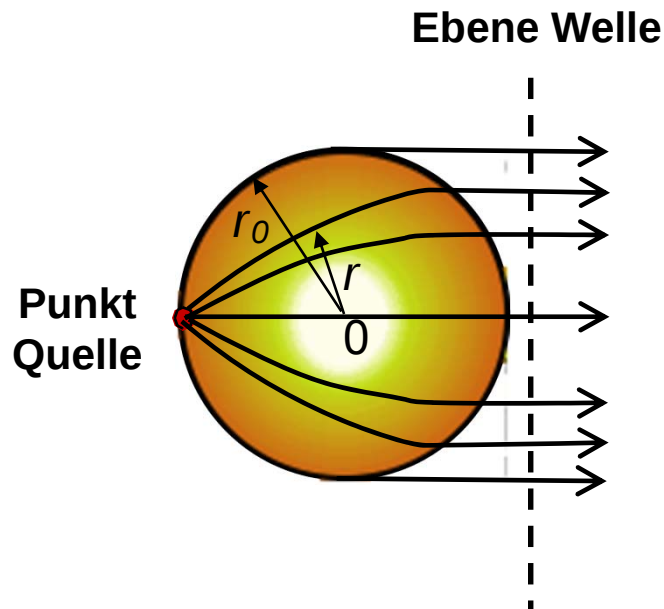
Strahlverlauf in der Draufsicht:



Rotationssymmetrie:



Strahlenoptische Betrachtung der Luneburg-Linse



$$\varepsilon_r(r) = n^2 = 2 - \left(\frac{r}{r_0}\right)^2$$