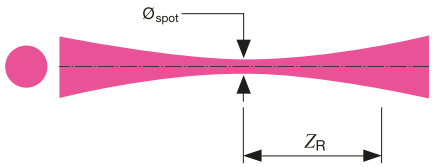
RAYLEIGH RANGE

DETERMINATION OF THE RAYLEIGH RANGE

Beam path of focused beam.



For a Gaussian beam the depth of focus is defined by the Rayleigh range $2 \cdot z_R$ in which the beam waist diameter $Ø_{spot}$ does not increase more than a factor of 1.41.

$$2z_R = \left| \frac{2 \cdot \pi \cdot Ø_{spot}^2}{4\lambda} \right|$$

λ = wavelength in µm

$Ø_{spot}$ = beam waist diameter in µm

EXAMPLE

Spot size: $Ø_{spot}$ = 7.1 µm
Wavelength: λ = 780 nm
Rayleigh range: $2z_R$=20.3 µm

This is a printout of the page https://sukhamburg.com/support/technotes/fiberoptics/coupling/focusingsm/rayleigh.html from 6/10/2025

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