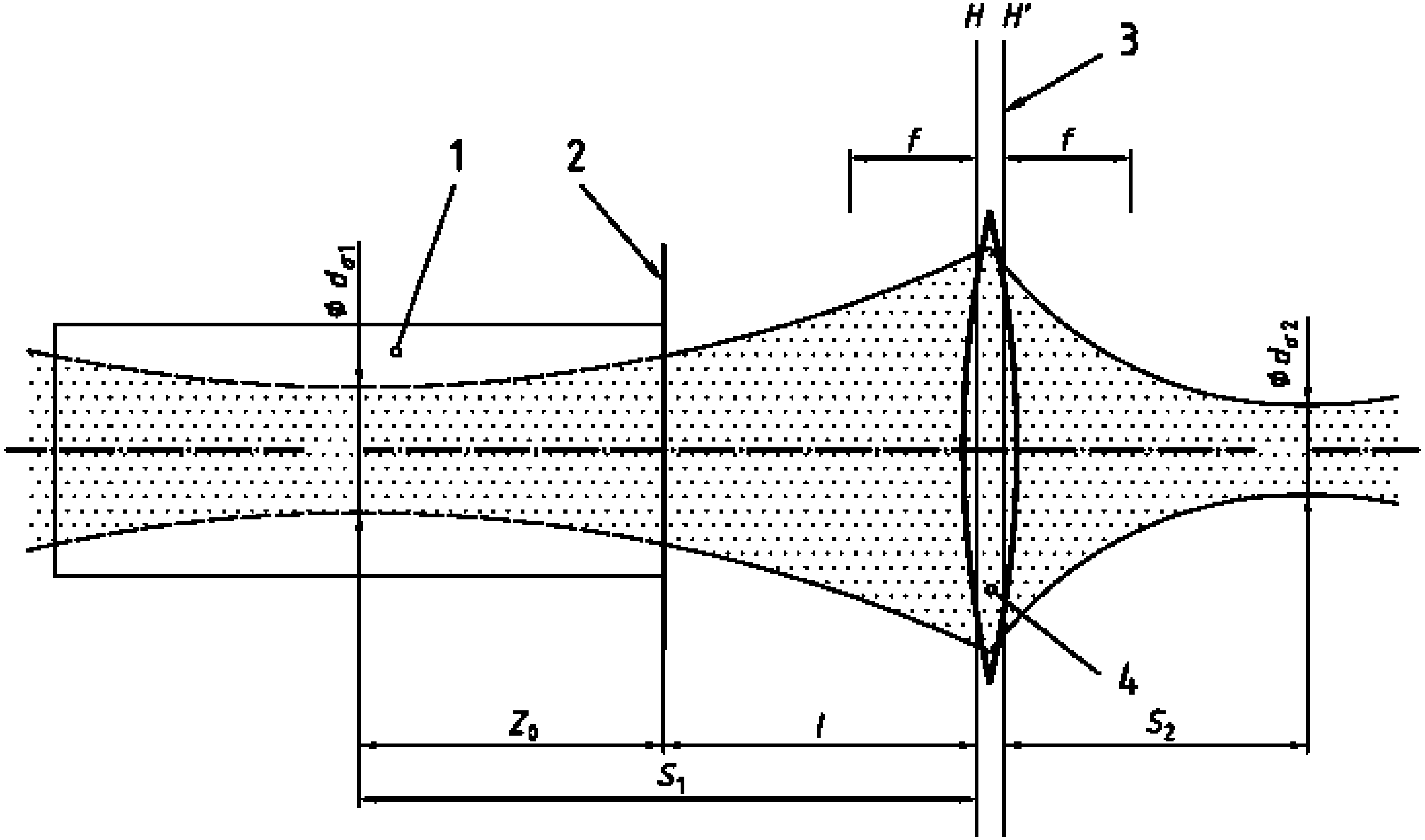
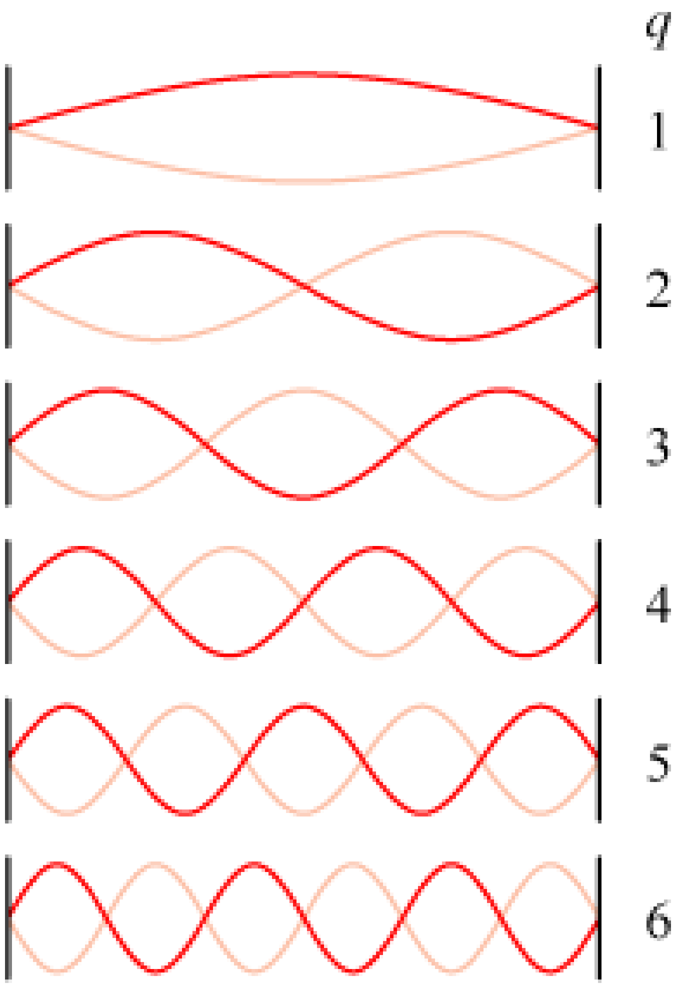


H
H'
3
f
f
1
2
φ $d_{\sigma 1}$
φ $d_{\sigma 2}$
4
Z_0
l
S_2
S_1



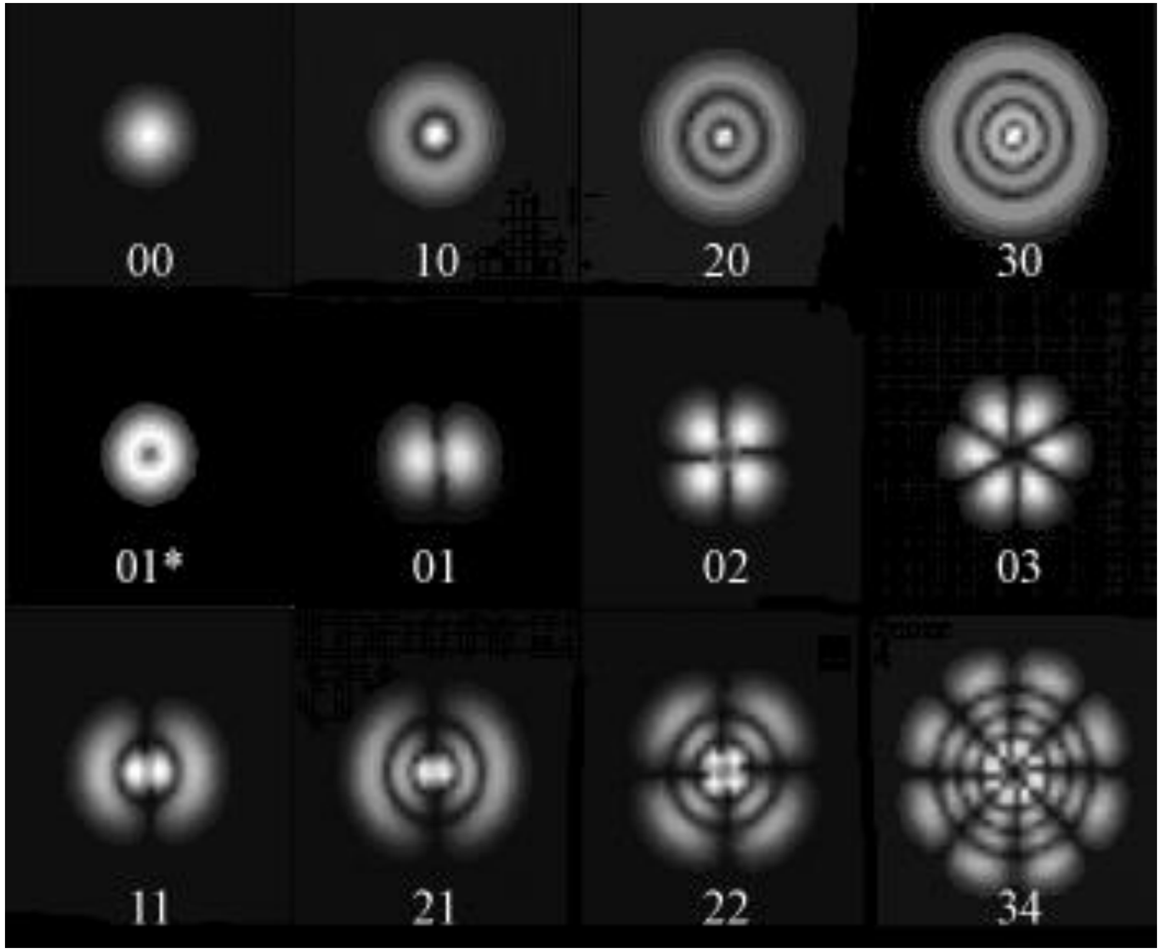
$$L = q\frac{\lambda}{2}$$

$$\Delta\nu = \frac{c}{2L}$$

Gaussian beam profile with a Laguerre polynomial.

$$I_{pl}(r,\phi) = I_0 \rho^l [L_p^l(\rho)]^2 \cos^2(l\phi) e^{-\rho}$$

where $\rho = 2r^2/w^2$, and L_p^l *is the associate Laguerre polynomial of order p and index l. w is the spot size of the mode corresponding to the Gaussian beam radius.*



Transversal Modes of a Laser Cavity (Rectangular symmetry)

In many lasers, the symmetry of the optical resonator is restricted by polarizing elements such as Brewster's angle windows. In these lasers, transverse modes with **rectangular symmetry** are formed.

These modes are designated TEM_{mn} *with m and n being the horizontal and vertical orders of the pattern. The intensity at point x,y is given by:*

$$I_{mn}(x,y) = I_0 \left[\mathrm{H}_m \left(\frac{\sqrt{2}x}{w} \right) \exp\left(\frac{-x^2}{w^2} \right) \right]^2 \left[\mathrm{H}_n \left(\frac{\sqrt{2}y}{w} \right) \exp\left(\frac{-y^2}{w^2} \right) \right]^2$$

where $H_m(x)$ *is the mth order* Hermite polynomial.