$$U(\mathbf{r}) = A\exp(-j\mathbf{k}\cdot\mathbf{r})$$

$$(\nabla^2 + k^2)U(\mathbf{r}) = 0$$

$$\nabla^2 u - \frac{1}{c^2}\frac{\partial^2 u}{\partial t^2} = 0$$

$$U(\mathbf{r}) = \frac{A}{r}\exp(-jkr)$$

$$k = \frac{2\pi\nu}{c} = \frac{\omega}{c}$$

$$U(\mathbf{r},t) = U(\mathbf{r})\exp(j2\pi\nu t)$$

$$U(\mathbf{r}) \approx \frac{A}{z}\exp(-jkz)\exp\left[-jk\frac{x^2+y^2}{2z}\right]$$

$$U(\mathbf{r}) = A(\mathbf{r})\exp(-jkz) \qquad u(\mathbf{r},t) = |A(\mathbf{r})|\cos[2\pi\nu t - kz + \arg\{A(\mathbf{r})\}]$$

$$\nabla_T^2 A - j\,2k\frac{\partial A}{\partial z} = 0$$

$$U(\mathbf{r}) = A_0\frac{W_0}{W(z)}\exp\left[-\frac{\rho^2}{W^2(z)}\right]\exp\left[-jkz - jk\frac{\rho^2}{2R(z)} + j\zeta(z)\right]$$

$$U_{l,m}(x,y,z) = A_{l,m}\left[\frac{W_0}{W(z)}\right]\mathbb{G}_l\left[\frac{\sqrt{2}\,x}{W(z)}\right]\mathbb{G}_m\left[\frac{\sqrt{2}\,y}{W(z)}\right]\exp\left[-jkz - jk\frac{x^2+y^2}{2R(z)} + j(l+m+1)\,\zeta(z)\right]$$

$$\mathbb{G}_l(u) = \mathbb{H}_l(u)\exp\left(\frac{-u^2}{2}\right), \qquad l = 0,1,2,\ldots$$

$$U_{l,m}(\rho,\varphi,z) = A_{l,m}\left[\frac{W_0}{W(z)}\right]\left(\frac{\rho}{W(z)}\right)^l L_m^l\left(\frac{2\rho^2}{W^2(z)}\right)\exp\left(-\frac{\rho^2}{W^2(z)}\right)\exp\left[-ikz - ik\frac{\rho^2}{2R(z)} - il\varphi + (l+2m+1)\zeta(z)\right]$$

$$U(\mathbf{r}) = A(x,y)\,e^{-j\beta z} \qquad \nabla_T^2 A + k_T^2 A = 0 \qquad k_T^2 + \beta^2 = k^2 \qquad \nabla_T^2 = \partial^2/\partial x^2 + \partial^2/\partial y^2$$

$$A(x,y) = A_m\,J_m(k_T\rho)\,e^{jm\phi}, \qquad m = 0, \pm 1, \pm 2$$