

$$\Phi[\chi] = F(a_n[\chi], b_n[\chi])$$

$$\left[ \frac{\partial^2}{\partial \xi^2} + \frac{\partial^2}{\partial \eta^2} + i\kappa \left( \xi \frac{\partial}{\partial \eta} - \eta \frac{\partial}{\partial \xi} \right) \right] F(\xi, \eta) = 0$$

$$\kappa = \frac{2n\pi\alpha m}{\hbar}$$

$$F(\xi, \eta) = \int dp \int dq f(p, q) \exp(ip\xi + iq\eta)$$

$$\left[ -p^2 - q^2 + i\kappa \left( -q \frac{\partial}{\partial p} + p \frac{\partial}{\partial q} \right) \right] f(p, q) = 0$$

$$p = r \cos \theta, \quad q = r \sin \theta, \quad f(p, q) = g(r, \theta)$$

$$\left[ -r^2 + i\kappa \frac{\partial}{\partial \theta} \right] g(r, \theta) = 0$$

$$g(r, \theta) = \gamma(r) \exp \left( \frac{r^2}{i\kappa} \theta \right)$$