

$$m\ddot{\mathbf{r}}(t) = -\nabla[V(\mathbf{r},t)+U(\mathbf{r},t)] = -\nabla\left[V(\mathbf{r},t)-\frac{\hbar^2}{2m}\frac{\nabla^2|\psi(\mathbf{r},t)|}{\psi(\mathbf{r},t)}\right]$$