

$$v(\mathbf{\check{p}}) = -4\pi e \int \int_0^{\mathbf{R}} \exp\left(\frac{ipr \cos \theta}{\hbar}\right) \phi(\mathbf{R}) d\mathbf{r} d\mathbf{R}$$

$$\int_0^{\mathbf{R}} \exp\left(\frac{ipr \cos \theta}{\hbar}\right) r^2 \sin \theta dr d\theta d\phi$$

In polar coordinates

$$I = \int_0^{2\pi} \int_0^{\pi} \int_0^{\infty} \nabla^2 \phi(\mathbf{r}) \exp\left(\frac{ipr \cos \theta}{\hbar}\right) r^2 \sin \theta dr d\theta d\phi$$

FIXME