Erwin Schroedinger 1887-1961

Austria

Nobel 1933

Schroedinger's equation for the electron wave function. Boundary conditions cause discrete solutions with quantized energies.

$$i\hbar\frac{\partial}{\partial t}\Psi(\mathbf{r},t) = \hat{H}\Psi(\mathbf{r},t)$$

$$= \left[\frac{-\hbar^2}{2\mu}\nabla^2 + V(\mathbf{r},t)\right] = \hat{H}$$

$$\hat{H}\Psi(\mathbf{r}) = E\Psi(\mathbf{r})$$

Schroedinger's equation merges ideas:

Planck & Einstein: quantization, photon

De Broglie: wavelength to particles

Bohr: discrete energy levels for electrons in atoms

Hamilton: The short wavelength limit − classical mechanics

Max Born: Wave amplitude square $|\Psi|^2$ is the probability to find the electron