	Ket Representation	Wave Function Representation	Matrix Representation
Operator for z-component of angular momentum	L_z		
Eigenvalues of L_z			
Normalized Eigenstates of L_z	$\lvert m\rangle$		$\ldots,\begin{pmatrix}\vdots\\1\\0\\0\\\vdots\end{pmatrix},\begin{pmatrix}\vdots\\0\\1\\0\\\vdots\end{pmatrix},\begin{pmatrix}\vdots\\0\\0\\1\\\vdots\end{pmatrix}\quad\ldots$
Coefficient of m^{th} eigenstates of L_z			
Probability of measuring $m\hbar$ for z-component of angular momentum	$P(\hbar m)=\lvert c_m\rvert^2=\lvert\langle m\lvert\Phi\rangle\rvert^2$		$P(m\hbar)=\lvert c_m\rvert^2=\left\lvert\begin{pmatrix}\cdots & 1 & \cdots & 0 & \cdots\end{pmatrix}\begin{pmatrix}\vdots\\c_m\\\vdots\\c_0\\\vdots\end{pmatrix}\right\rvert^2$
Expectation value of z-component of angular momentum			$\langle\Phi\lvert L_z\rvert\Phi\rangle=\begin{pmatrix}\cdots & c_1^* & c_0^* & c_{-1}^* & \cdots\end{pmatrix}\begin{pmatrix}\ddots & \vdots & \vdots & \vdots & ⋰\\\cdots & 1\hbar & 0 & 0 & \cdots\\\cdots & 0 & 0\hbar & 0 & \cdots\\\cdots & 0 & 0 & -1\hbar & \cdots\\⋰ & \vdots & \vdots & \vdots & \ddots\end{pmatrix}\begin{pmatrix}\vdots\\c_1\\c_0\\c_{-1}\\\vdots\end{pmatrix}$

	Ket Representation	Wave Function Representation	Matrix Representation
Hamiltonian	$\hat{H}$		$\begin{pmatrix} \ddots & \vdots & \vdots & \vdots & \iddots \\ \cdots & E_1 & 0 & 0 & \cdots \\ \cdots & 0 & E_0 & 0 & \cdots \\ \cdots & 0 & 0 & E_{-1} & \cdots \\ \iddots & \vdots & \vdots & \vdots & \ddots \end{pmatrix} = \begin{pmatrix} \ddots & \vdots & \vdots & \vdots & \iddots \\ \cdots & \hbar^2/2I & 0 & 0 & \cdots \\ \cdots & 0 & 0 & 0 & \cdots \\ \cdots & 0 & 0 & \hbar^2/2I & \cdots \\ \iddots & \vdots & \vdots & \vdots & \ddots \end{pmatrix}$
Eigenvalues of Hamiltonian			
Normalized Eigenstates of Hamiltonian		$\Phi_m(\phi) = \sqrt{\frac{1}{2\pi r_0}} e^{im\phi}$	
Coefficient of m^{th} energy eigenstate	$c_m = \langle m \vert \Phi \rangle$		$\begin{pmatrix} \cdots & 1 & \cdots & 0 & \cdots \end{pmatrix} \begin{pmatrix} \vdots \\ c_m \\ \vdots \\ c_0 \\ \vdots \end{pmatrix}$
Probability of measuring E_m		$P(E_m) = \left\vert \int_0^{2\pi} \sqrt{\frac{1}{2\pi r_0}} e^{-im\phi}\, \Phi(\phi) r_0 d\phi \right\vert^2 + \left\vert \int_0^{2\pi} \sqrt{\frac{1}{2\pi r_0}} e^{im\phi}\, \Phi(\phi) r_0 d\phi \right\vert^2$	
Expectation value of Hamiltonian	$\langle \Phi \vert H \vert \Phi \rangle = \sum_m \vert c_m \vert^2 E_m$		