Az $\hat{l}^2$ operátor gömbi polárkoordinátákban

$$\hat{l}^2 = -\hbar^2 \left(\frac{1}{\sin\vartheta} \frac{\partial}{\partial\vartheta} \left(\sin\vartheta \frac{\partial}{\partial\vartheta} \right) + \frac{1}{\sin^2\vartheta} \frac{\partial^2}{\partial\varphi^2} \right)$$

A Laplace-operátor gömbi polárkoordinátákban

$$\hat{\Delta} = -\frac{1}{2} \left(\frac{\partial^2}{\partial r^2} + \frac{2}{r} \frac{\partial}{\partial r} + \frac{1}{r^2} \left(-\hat{l}^2 \right) \right)$$

A hidrogén atom sajátfüggvényei

$1s$	$\psi_{100} = \frac{1}{\sqrt{\pi}} e^{-r}$
$2s$	$\psi_{200} = \frac{1}{4\sqrt{2\pi}} (2-r) e^{-r/2}$
$2p_0$	$\psi_{210} = \frac{1}{4\sqrt{2\pi}} r e^{-r/2} \cos(\vartheta)$
$2p_{\pm 1}$	$\psi_{21\pm 1} = \frac{1}{8\sqrt{\pi}} r e^{-r/2} \sin(\vartheta) e^{\pm i\varphi}$
$3s$	$\psi_{300} = \frac{2}{81\sqrt{3\pi}} (27 - 18r + 2r^2) e^{-r/3}$
$3p_0$	$\psi_{310} = \frac{\sqrt{2}}{81\sqrt{\pi}} r(6-r) e^{-r/3} \cos(\vartheta)$
$3p_{\pm 1}$	$\psi_{31\pm 1} = \frac{1}{81\sqrt{\pi}} r(6-r) e^{-r/3} \sin(\vartheta) e^{\pm i\varphi}$
$3d_0$	$\psi_{320} = \frac{1}{81\sqrt{6\pi}} r^2 e^{-r/3} (3\cos^2(\vartheta) - 1)$
$3d_{\pm 1}$	$\psi_{32\pm 1} = \frac{1}{81\sqrt{\pi}} r^2 e^{-r/3} \sin(\vartheta) \cos(\vartheta) e^{\pm i\varphi}$
$3d_{\pm 2}$	$\psi_{32\pm 2} = \frac{1}{162\sqrt{\pi}} r^2 e^{-r/3} \sin^2(\vartheta) e^{\pm 2i\varphi}$

$$\rho(\nu,T)d\nu = \frac{8\pi h\nu^3}{c^3}\frac{d\nu}{\exp\left(\frac{h\nu}{kT}\right)-1}$$

$$\hat{J}_a = i\hbar\left(\cos\chi\csc\theta\frac{\partial}{\partial\varphi} - \cos\chi\cot\theta\frac{\partial}{\partial\chi} - \sin\chi\frac{\partial}{\partial\theta}\right)$$

$$\hat{J}_b = i\hbar\left(-\sin\chi\csc\theta\frac{\partial}{\partial\varphi} + \sin\chi\cot\theta\frac{\partial}{\partial\chi} - \cos\chi\frac{\partial}{\partial\theta}\right)$$

$$\hat{J}_c = -i\hbar\frac{\partial}{\partial\chi}$$

$$\hat{J}_X = i\hbar\left(\cos\varphi\cot\theta\frac{\partial}{\partial\varphi} - \cos\varphi\csc\theta\frac{\partial}{\partial\chi} + \sin\varphi\frac{\partial}{\partial\theta}\right)$$

$$\hat{J}_Y = i\hbar\left(\sin\varphi\cot\theta\frac{\partial}{\partial\varphi} - \sin\varphi\csc\theta\frac{\partial}{\partial\chi} - \cos\varphi\frac{\partial}{\partial\theta}\right)$$

$$\hat{J}_Z = -i\hbar\frac{\partial}{\partial\varphi}$$

$$\hat{J}^2 = -\hbar^2\left(\csc^2\theta\frac{\partial^2}{\partial\varphi^2} + \csc^2\theta\frac{\partial^2}{\partial\chi^2} - 2\cot\varphi\csc\varphi\frac{\partial^2}{\partial\varphi\,\partial\chi} + \frac{\partial^2}{\partial\theta^2} + \cot\theta\frac{\partial}{\partial\theta}\right)$$

$$sI_m(s) = k\sum_{i\neq j} A_i(s)A_j(s)r_{ij}^{-1}\cos(\eta_i - \eta_j)\exp(-\ell_{ij}^2 s^2/2)\sin[s(r_{ij} - \kappa_{ij}s^2)]$$