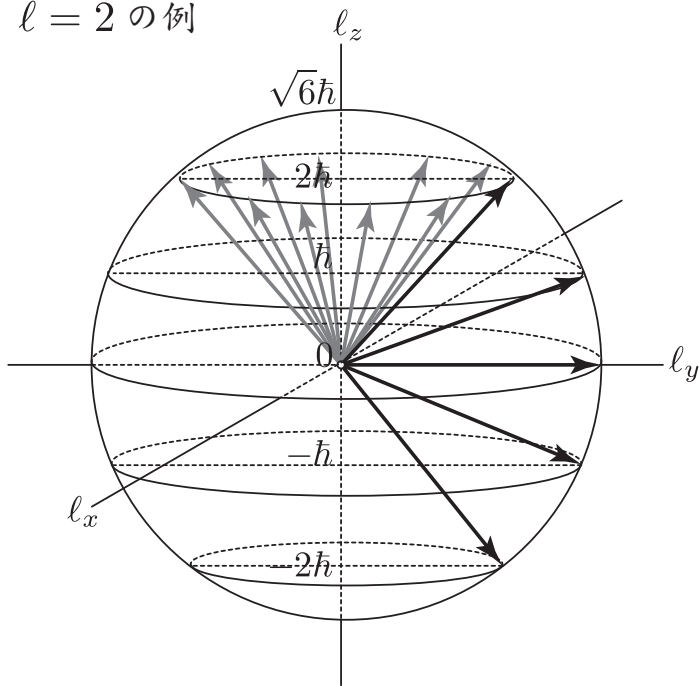


$l = 2$  の例



$$\hat{\mathbf{l}}^2 Y_{l,m} = l(l+1)\hbar^2 Y_{l,m}$$

$$|\hat{\mathbf{l}}| = \sqrt{l(l+1)}\hbar$$

$$\hat{l}_z Y_{l,m} = m\hbar Y_{l,m}$$

$$m = -l, -l+1, \dots, l-1, l$$

$\mathbf{l}_1$   $l = 2$   
 $\hat{\mathbf{l}}^2 : 6\hbar^2$   
 $|\mathbf{l}| : \sqrt{6}\hbar$   
 $l_z : -2\hbar, -\hbar, 0, \hbar, 2\hbar$

$\mathbf{l}_2$   $\longrightarrow$

$l = 1$   
 $\hat{\mathbf{l}}^2 : 2\hbar^2$   
 $|\mathbf{l}| : \sqrt{2}\hbar$   
 $l_z : -\hbar, 0, \hbar$

$\mathbf{l}_3$   $l = 3$   
 $\hat{\mathbf{l}}^2 : 12\hbar^2$   
 $|\mathbf{l}| : \sqrt{12}\hbar$   
 $l_z : -3\hbar, -2\hbar, -\hbar, 0, \hbar, 2\hbar, 3\hbar$

角運動量はベクトルだから、作図で合成できる

