

$J^P$	$L_R$	Angular term
$0^-$	1	$-\cos \theta_D$
$1^-$	1	$\frac{i}{\sqrt{2}} \sin \theta_{D^*} \sin \theta_D \sin \phi_D$
$1^+$	0	$\frac{1}{\sqrt{3}} (\cos \theta_{D^*} \cos \theta_D - \sin \theta_{D^*} \sin \theta_D \cos \phi_D)$
	2	$-\frac{1}{\sqrt{6}} (2 \cos \theta_{D^*} \cos \theta_D + \sin \theta_{D^*} \sin \theta_D \cos \phi_D)$
$2^-$	1	$\frac{1}{\sqrt{10}} (-3 \sin \theta_{D^*} \cos \theta_{D^*} \sin \theta_D \cos \phi_D - 3 \sin^2 \theta_{D^*} \cos \theta_D + 2 \cos \theta_D)$
	3	$\frac{\sqrt{15}}{10} (-2 \sin \theta_{D^*} \cos \theta_{D^*} \sin \theta_D \cos \phi_D + 3 \sin^2 \theta_{D^*} \cos \theta_D - 2 \cos \theta_D)$
$2^+$	2	$\frac{i\sqrt{6}}{2} \sin \theta_{D^*} \cos \theta_{D^*} \sin \theta_D \sin \phi_D$