Region I

 ℓ_1^+ (isolated)

 ℓ_2^- (isolated)

Region II

 ℓ_1^+ (isolated)

 ℓ_2^+ (isolated)

Region III

 ℓ_1^+ (isolated)

 ℓ_2^- (not-isolated)

Region IV

 ℓ_1^+ (isolated)

 ℓ_2^+ (not-isolated)