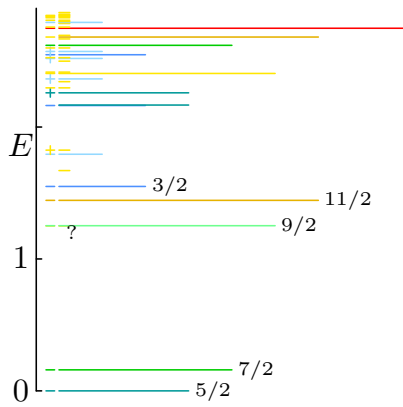
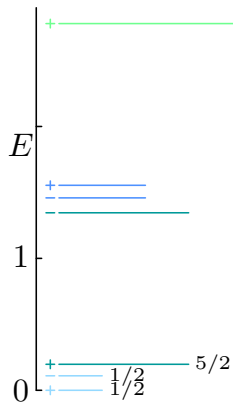
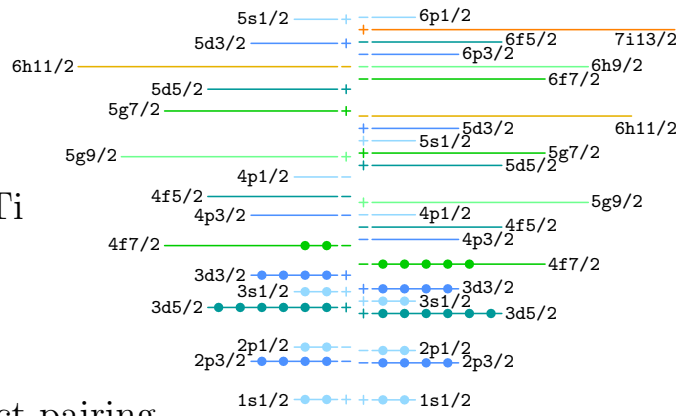


# Failures of the Shell Model



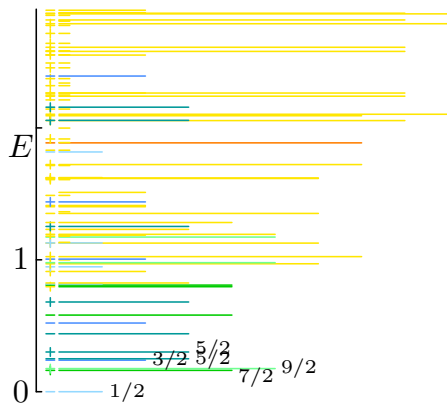
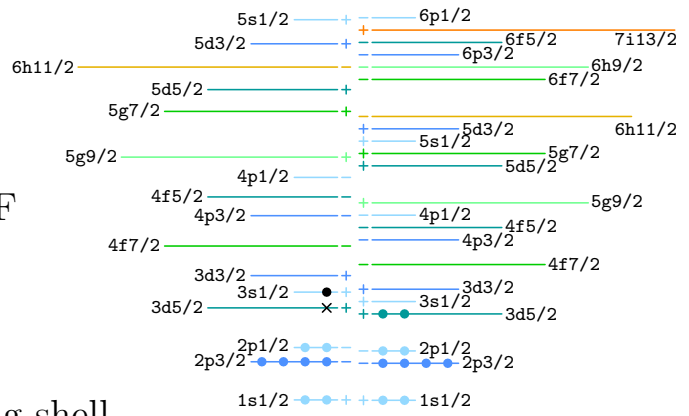
$^{47}_{22}\text{Ti}$

Imperfect pairing.



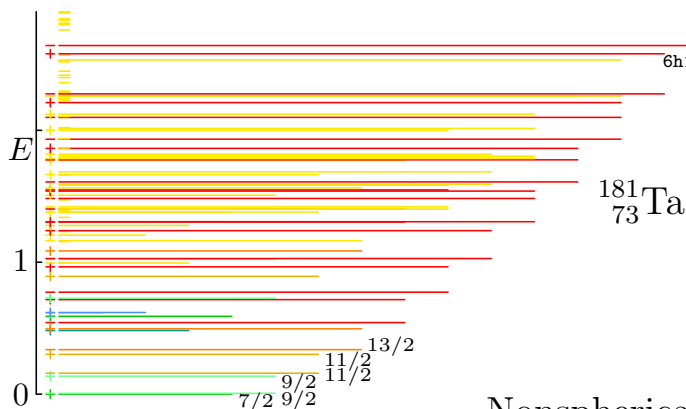
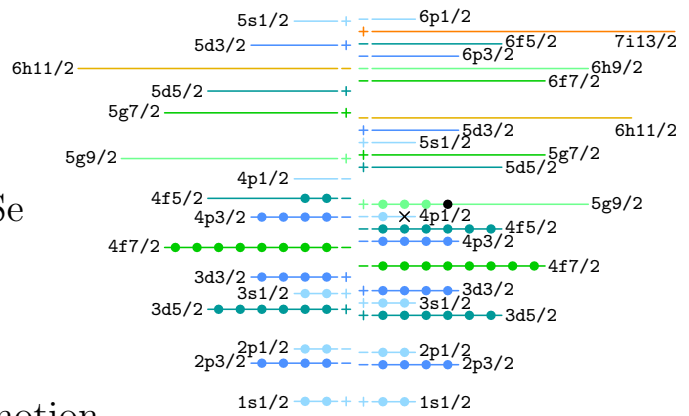
$^{19}_9\text{F}$

Wrong shell.



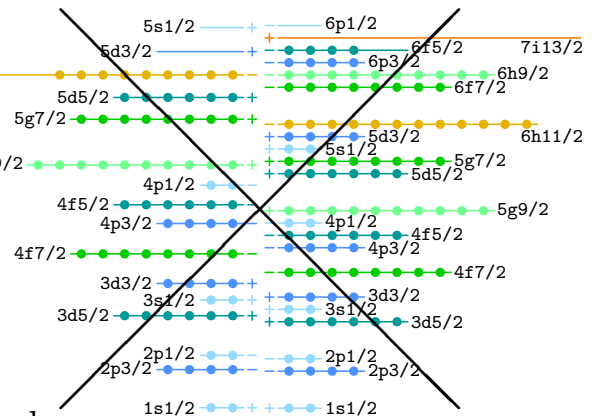
$^{77}_{34}\text{Se}$

Promotion.



$^{181}_{73}\text{Ta}$

Nonspherical nucleus.



spin:  $-0$   $-\frac{1}{2}$   $-1$   $-\frac{3}{2}$   $-2$   $-\frac{5}{2}$   $-3$   $-\frac{7}{2}$   $-4$   $-\frac{9}{2}$   $-5$   $-\frac{11}{2}$   $-6$   $-\frac{13}{2}$   $-7$   $-\geq \frac{15}{2}$   $-\gt \frac{29}{2}$   $-?$