Nuclear structure study using a hybrid approach of shell model and Gogny-type density functionals
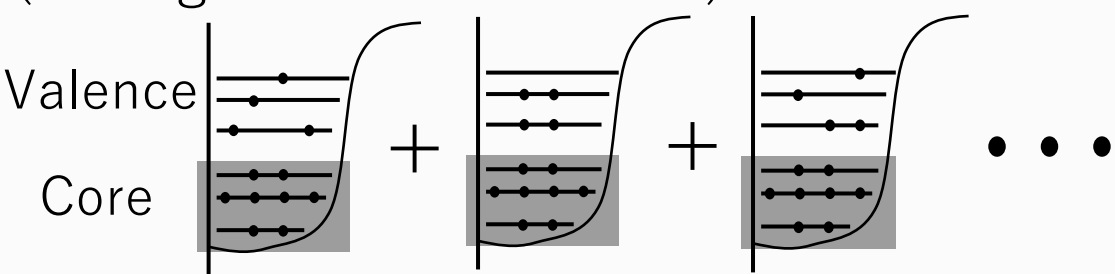
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Calculation architecture: Shell model + DFT

Shell model	Density Functionals Theory （DFT）
Configuration mixing （Configuration interaction） is included Valence Core	Effective interaction including the density dependence term Density dependence term (Gogny type) $V_{\text{Gongy}}(\rho) = t_3 (1 + x_3 P_\sigma) \delta(\mathbf{r}_1 - \mathbf{r}_2) \left[\rho\left(\frac{\mathbf{r}_1 + \mathbf{r}_2}{2} \right)^\alpha \right]$

Results using Gogny-type density functionals

■ Ground-state energy   ■ Energy spectra   ■ Neutron separation energy