Best “mean-field” nuclei for fits

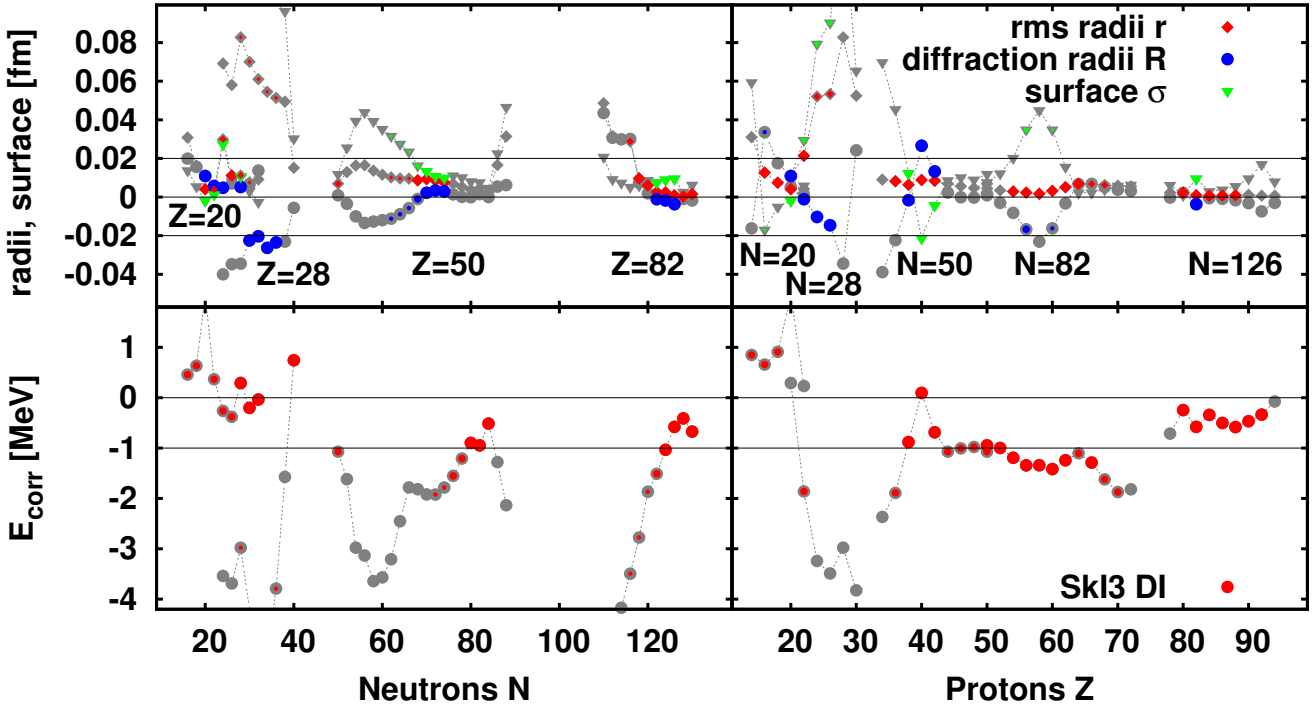
“mean-field” nucleus $\leftrightarrow$ little ground state correlations (GSC)

Criteria for selection:

- spherical mean-field groundstate
  $\Rightarrow$ enables spherical SHF calculations
  $\Rightarrow$ restricts sampling to semimagic nuclei
- long isotopic & isotonic chains
  $\Rightarrow$ information on isovector trends
  $\Rightarrow$ check GSC far away from doubly-magic nuclei
- **effects from GSC on observables should be unbiased**
  $\Rightarrow$ fits average through fluctuating GSC
  $\Rightarrow$ some observables have shifts with definite sign (E, r, σ)

Goal: Minimize fit errors from GSC

Best “Mean-Field” nuclei for fits



- similar for all tested Skyrme forces and pairing models
- selection and weights motivated by requiring small GSC
- excluded or degraded plotted in gray

+

- pairing gaps
- ls-splittings
- giant resonances (GMR,GQR,^{208}Pb)
- neutron skin (^{208}Pb)

$$a_{\rm sym} = (30 \pm 1)\text{MeV}\ ,\ \ K_\infty = (235 \pm 5)\text{MeV}\ ,\ \ m^*/m = 0.9 \pm 0.05$$