Large-Scale Calculations of Single-Particle Properties CARLO BARBIERI, RIKEN — We review recent large-scale calculations of single-particle energies and spectroscopic factors around closed shell nuclei in the $sd$ and $pf$ regions. Emphasis will be put on the following results:

- The self-consistent Green’s functions method employed in the calculations reproduces the benchmark results for the binding energy of $^4$He with good accuracy. Ab-initio calculations have now been performed up to $^{56}$Ni.

- Preliminary studies of spectroscopic factors, based on the chiral N3LO force, exhibit an asymmetry dependence similar to that observed in heavy-ion knock-out experiments but weaker in magnitude.