High-Performance Code for Nuclear Level Density
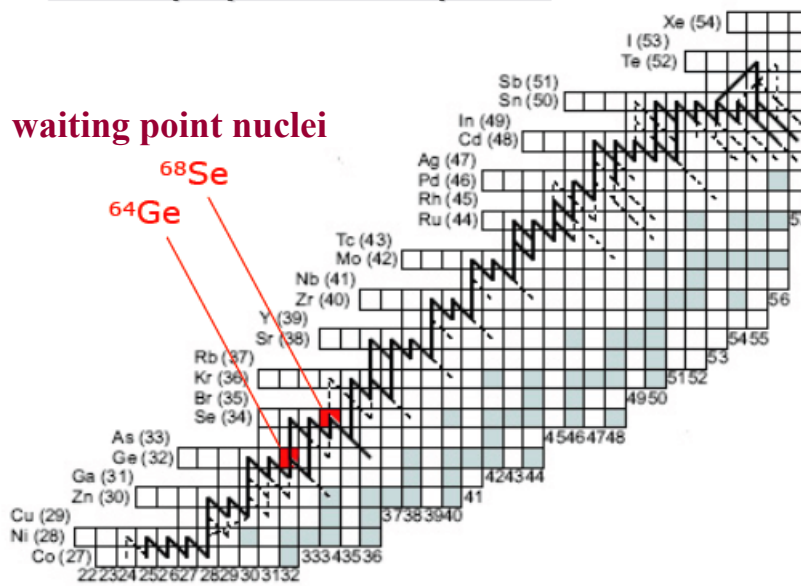
Outcome: reaction rates for nuclear astrophysics and nuclear engineering

Algorithm: Dynamical Load Balancing
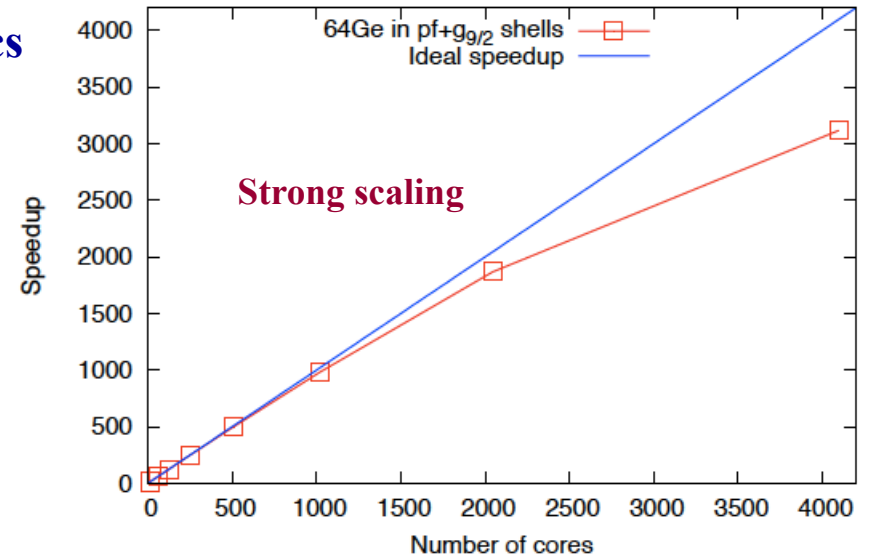
Performance metric: strong scaling

Machine: Franklin@NERSC

the rp-process path

waiting point nuclei

^{68}Se

^{64}Ge

Schatz et al. Phys. Rep 294 (1998) 167-298

Nuclear Level Density: JMOMENTS code

- ^{64}Ge in pf+$g_{9/2}$ shells
- Ideal speedup

Strong scaling

Speedup vs Number of cores

^{64}Ge: comparison for two model spaces

- pf shell, DIM=10^9
- pf+$g_{9/2}$ shell, DIM=10^{14}

Nuclear Level Density vs E_x (MeV)