# Why Exotic Nuclei ?

- There are so many!
  - in nature: 270 stable isotopes
    50 radioactive isotopes
    320 in total
  - synthesized: 2500
    $\rightarrow$ systematics!

- Understanding of nuclear forces
  - systematic variation of N and Z (2-dimensional!)
  - improvement of nuclear models

- Astrophysics
  understanding of nucleosynthesis and elemental abundances
  - decay modes, half-lives, branching ratios
  - Q-values $\rightarrow$ nuclear masses!

- New phenomena and new elements
  - particle stability, heaviest elements
  - nuclear shells and magicity far-off stability
  - g.s. proton emission, 2p-decay, superdeformation
  - skin- and halo-nuclei