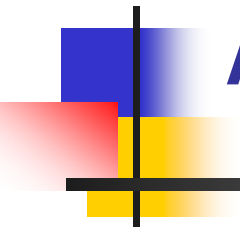


# Activity and Half-life

# Half-Life

- Each radioactive nuclide has a characteristic half-life
- Half decays in one half-life
- Daughter may be radioactive or stable

$$I-135 \rightarrow Xe-135 + \beta^-$$

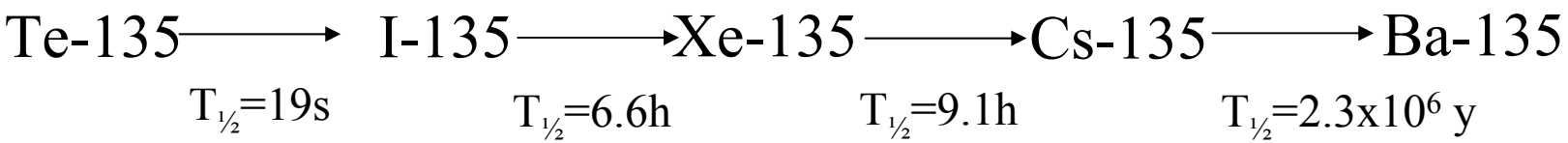
Parent

Daughter

$T_{½}$ = 6.1 h

# More Half-life

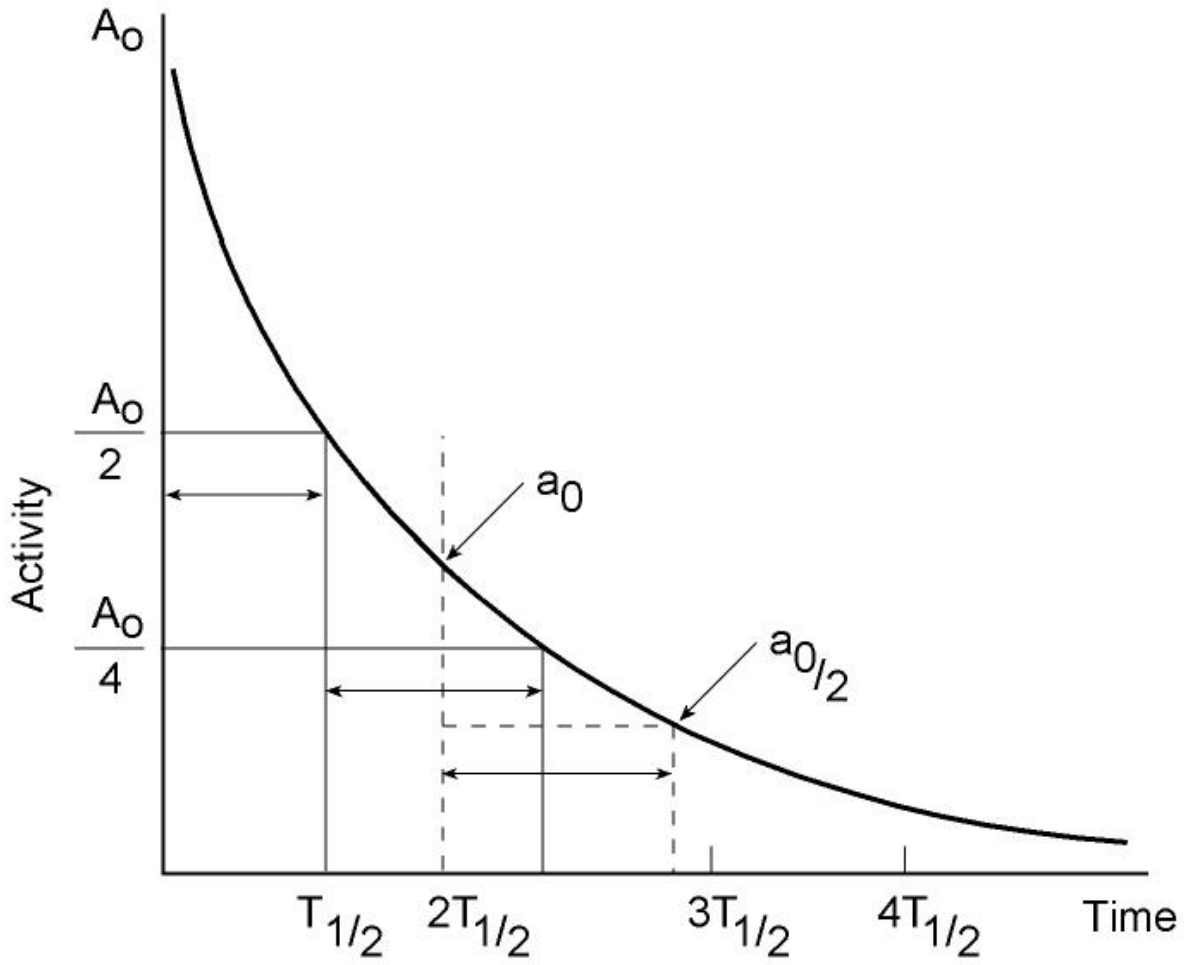
- Half-life have a very wide range
- U-238 $4.5 \times 10^9$ y
- Ge-89 >150 ns



# Activity

- The rate at which something is decaying
- Depends on half-life and amount of material

# Exponential Decay Curve



# Units of Activity

- Originally disintegrations per second
  - dps
  - Far too easy
- Bequerel
  - Bq
  - 1 Bq = 1 dps
- Curie
  - Ci
  - 1 Ci = $3.7 \times 10^{10}$ dps