

8.701

Introduction to Nuclear
and Particle Physics

Markus Klute - MIT

9. Nuclear Physics

9.6 Gamma Decay



Gamma Decay

Very similar to atomic physics transitions

Nuclei have excited states similar to atoms

γ decays important in decays following α and β decays

Practical consequences

Fission: Significant energy released in γ decays

Radiotherapy: γ from Co-60 decays

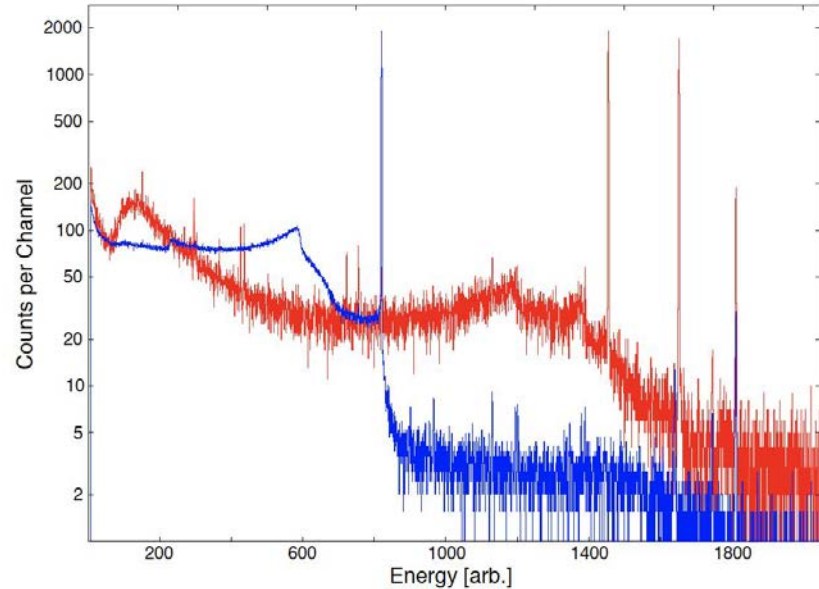
Medical imaging, e.g. Tc

Studying γ emission to deduce spin and parity of excited states

Nuclear Spectroscopy

Every isotope has its characteristic γ -ray spectrum

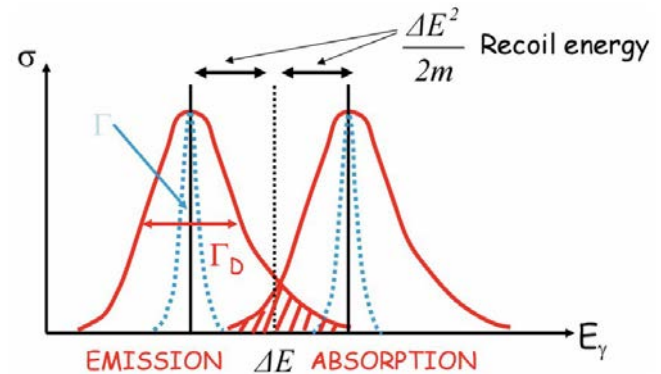
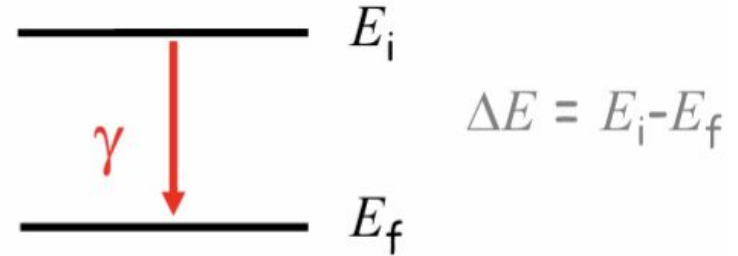
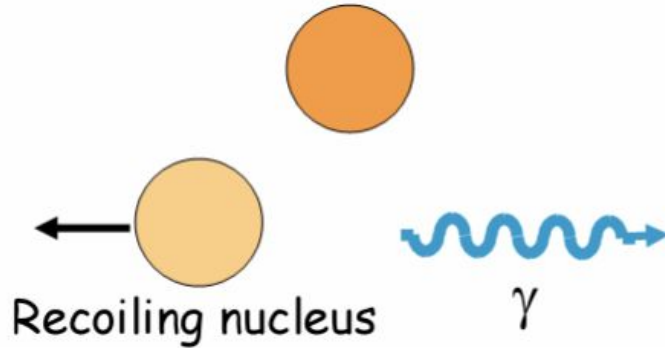
Red: ^{60}Ni from the decay of ^{60}Co
Blue: ^{137}Ba from the decay of ^{137}Cs



Mössbauer effect

initial state

final state



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