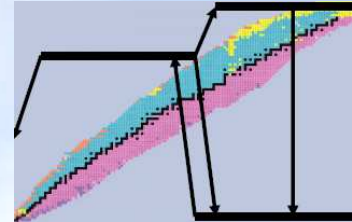


WORKSHOP ON NUCLEAR ISOMERS

structure and applications
Guildford, 19-21 May 2009



UNIVERSITY OF
SURREY



Science & Technology
Facilities Council



DTTRA
Defense Threat
Reduction Agency

isomer hot-spots

“different in their stability and mode of breaking up”



Lise Meitner,
buried in Bramley, 1968,
studied isomers in 1930's



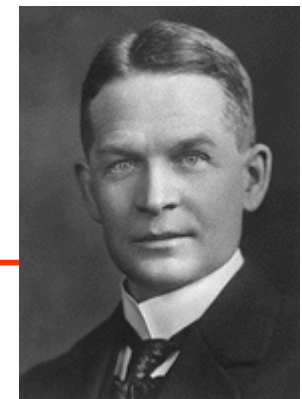
Leo Szilard, found
indium isomers, London, 1935

Guildford

Isomer Workshop 2010

Frederick Soddy, born Eastbourne 1877

predicted isomers, 1917



Guildford mathematicians



Alan Turing

Charles Lutwidge Dodgson



Lewis Carroll

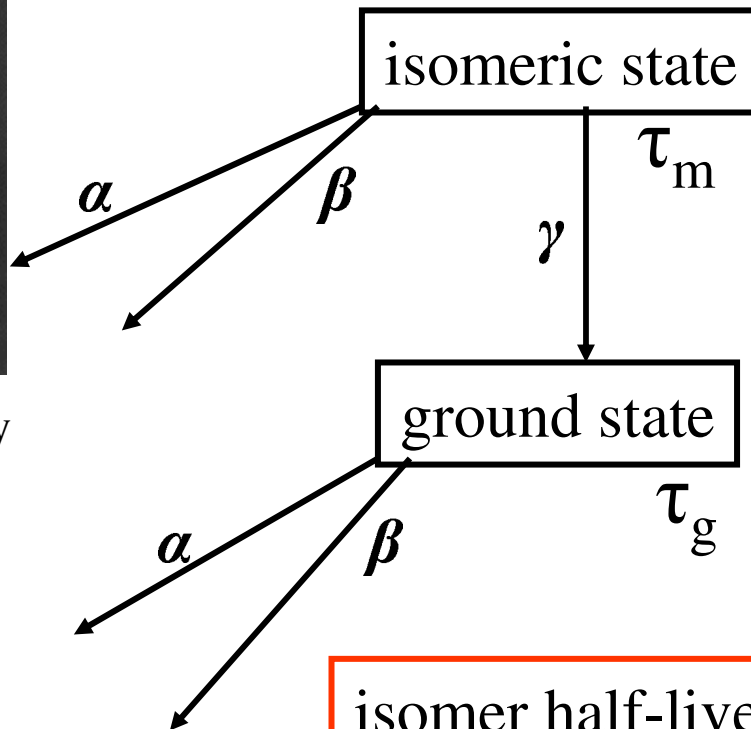
O frabjous day!
Callooh! Callay!

Isomer prediction: Soddy, *Nature* 99 (1917) 433

“We can have isotopes with identity of atomic weight, as well as of chemical character, which are different in their stability and mode of breaking up.”



Frederick Soddy



isomer half-lives range
from 10^{-9} seconds
to $>10^{16}$ years

explanation:

von Weizsäcker,
Naturwissenschaften
24 (1936) 813

at age 24

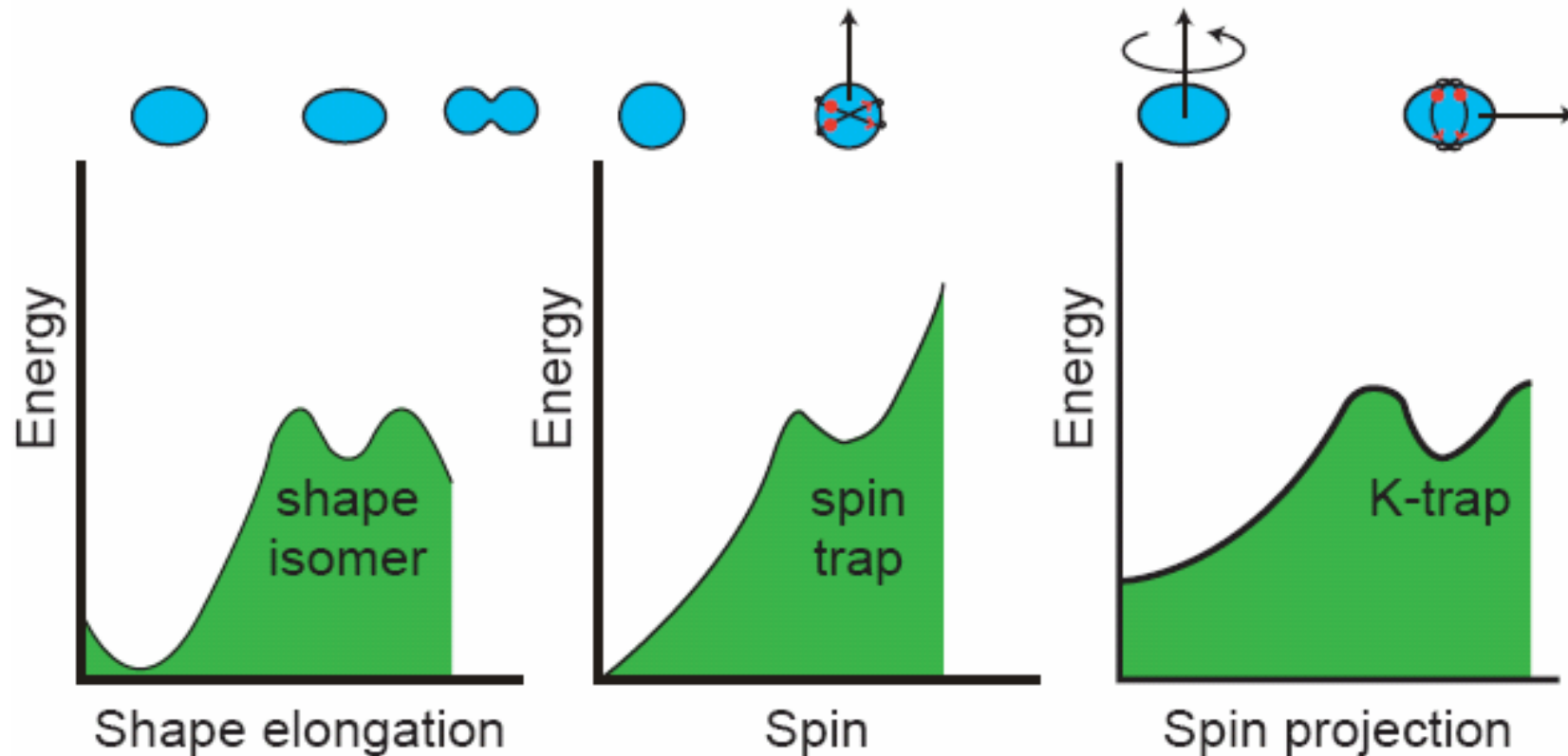


Carl von Weizsäcker

**importance
of
spin**

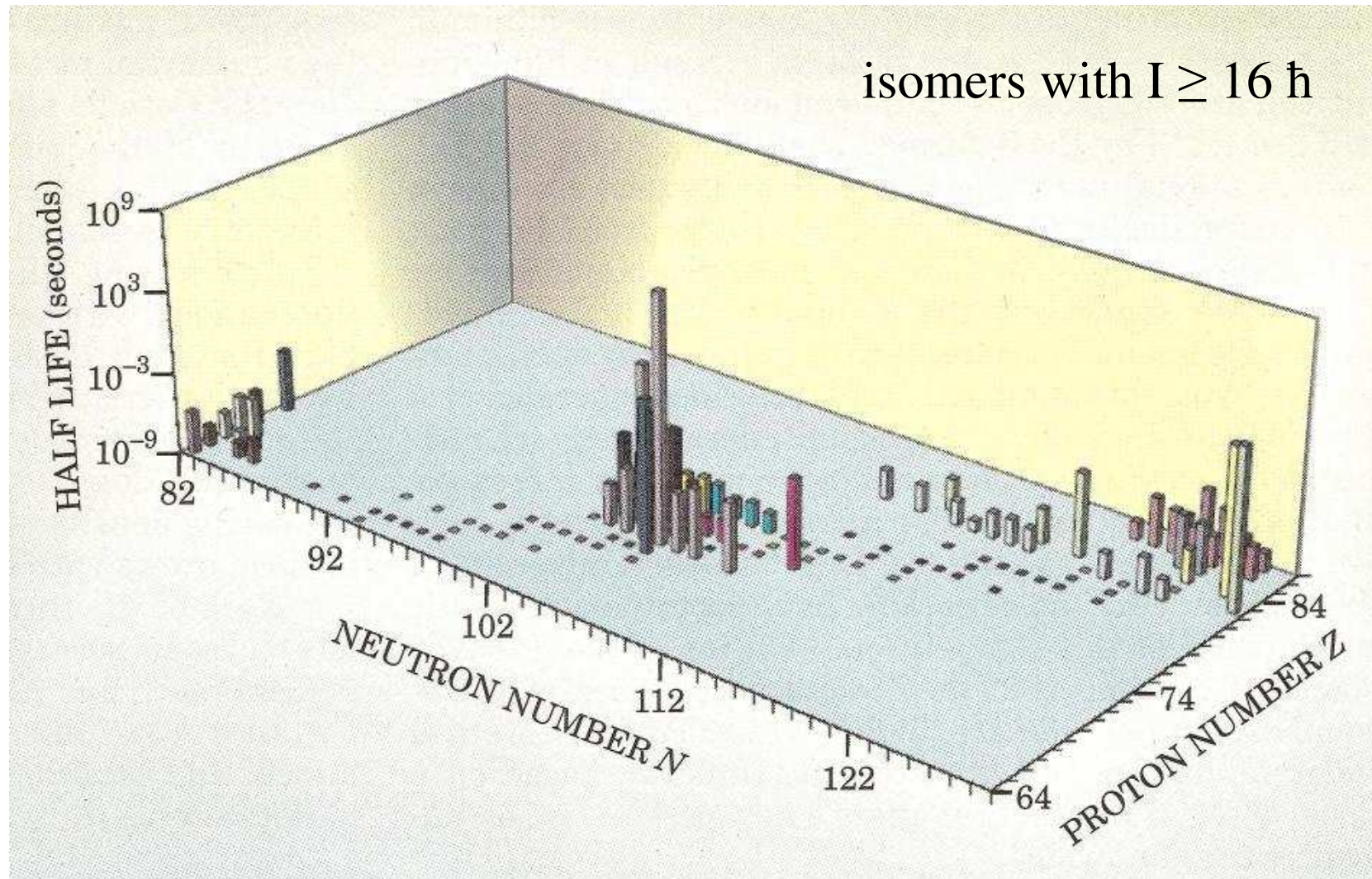
Nuclear isomers: energy traps

excited state half-lives ranging from nanoseconds to years



Walker and Dracoulis, Nature 399 (1999) 35

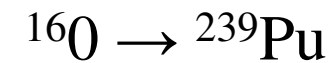
Nuclear isomers: energy traps





George Dracoulis

40 years of
nuclear physics
research:



180 nuclides
studied

Isomer workshop in honour of George Dracoulis