


Notable features of neutrons



Mass

No Charge

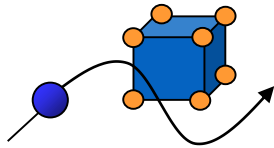
Spin $1/2$ 



No charge



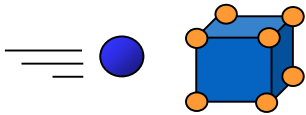
Deep penetration



Wavelength $\text{\AA} \sim \text{nm}$
(Thermal & Cold Neutron)



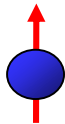
Atomic & Nanometer scale



Energy $\sim \text{meV}$



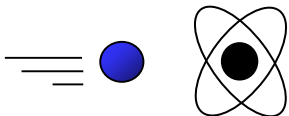
Same magnitude as
basic excitations in solids



Spin $=1/2$



Magnetic structure, dynamics



Interacts with nuclei



Contrast variation
($b_H = -3.74\text{fm}$, $b_D = 6.67\text{fm}$)

“If the God didn’t invent the neutron, then we would have to.” - Bert Brockhouse