MRI

Proton density seen
Manipulates hydrogen protons (H^+) using:
1) Superconducting magnets
2) Radiofrequency coil

Protons spin on an axis that wobbly (Precession)

Resting state (no magnetic) field spin & precession random

Magnetic field (MRI magnet) Axes align but precession not synchron-ed
= Net longitudinal magnitisation vector

RF pulse causes 1) Proton axes to lose parallelism
2) Protons spin (precess) in a synchronised fasion

RF pulse off T1 = release energy on returning to realigned axis of magnetic field
T2 = lose their synchronised spinning

RF coil detects energy emitted

Images / sequences
T1 anatomy fat bright (high signal intensity)
T2 Pathology fluid / fat bright
STIR (Short tau inversion recovery) Fat suppression
used to detect fluid (oedema) in bone marrow eg knee MRI
MARS (Metal artifact reduction)

Contra indications: Some pacemakers, implantable dyile, electromagnetic implants, cochlear implants, clips, intraorbital metalic foreign body