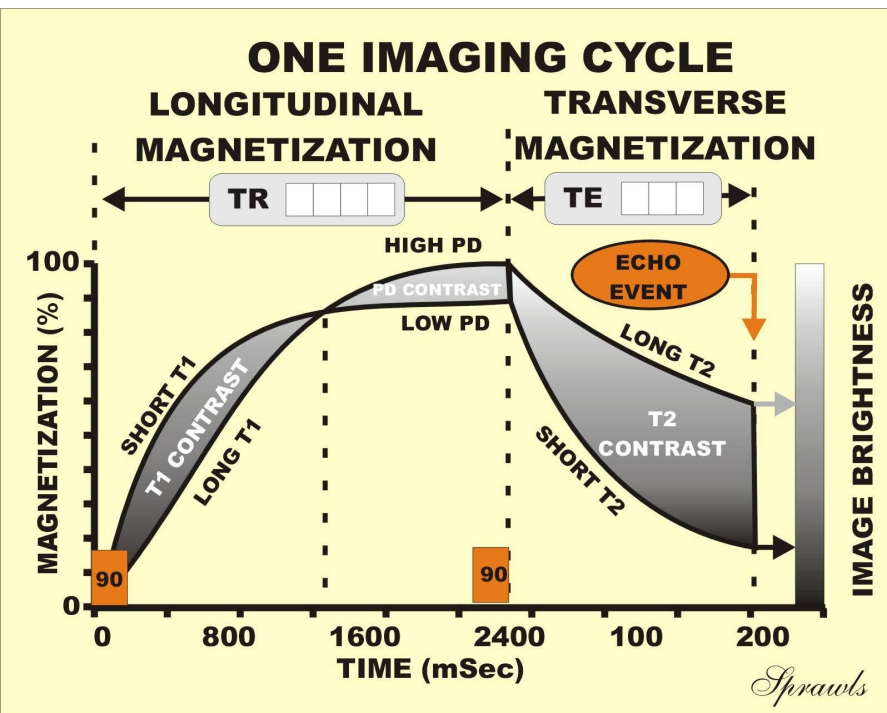


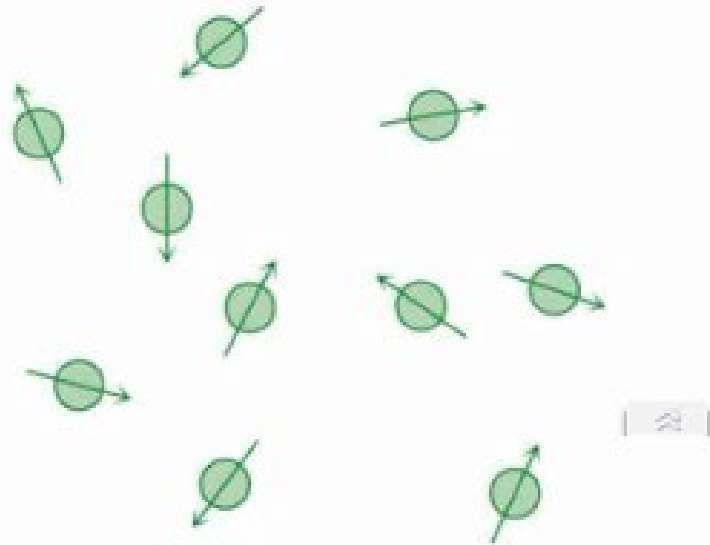


Goal



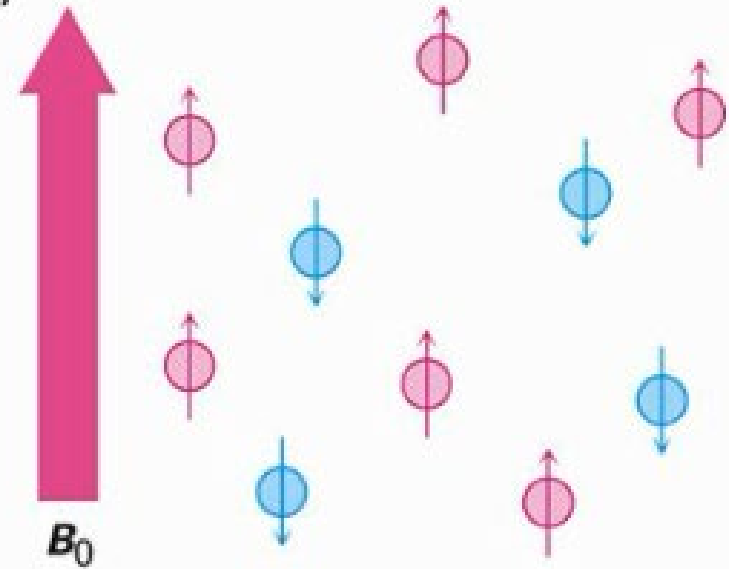
Substance	T1	T2
Simple fluid	Dark	Bright
Edema	Dark	Bright
Proteinaceous/hemorrhagic fluid	Bright	Dark
Hemorrhage	Bright	Dark
Fat	Bright	Bright
Fibrosis	Dark	Dark
Iron/Calcification/Other metals	Dark	Dark

(a)



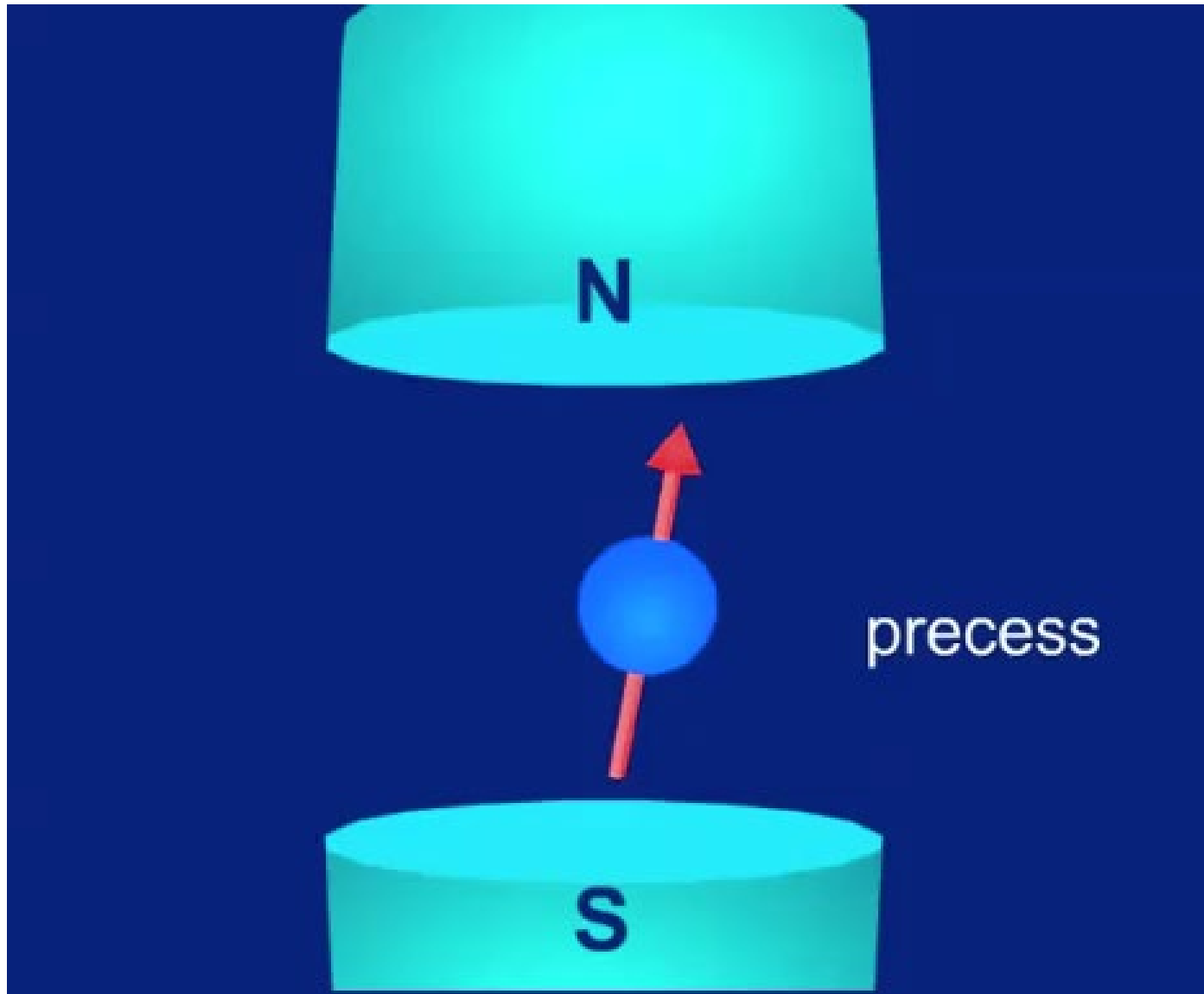
Outside Magnetic Bore

(b)

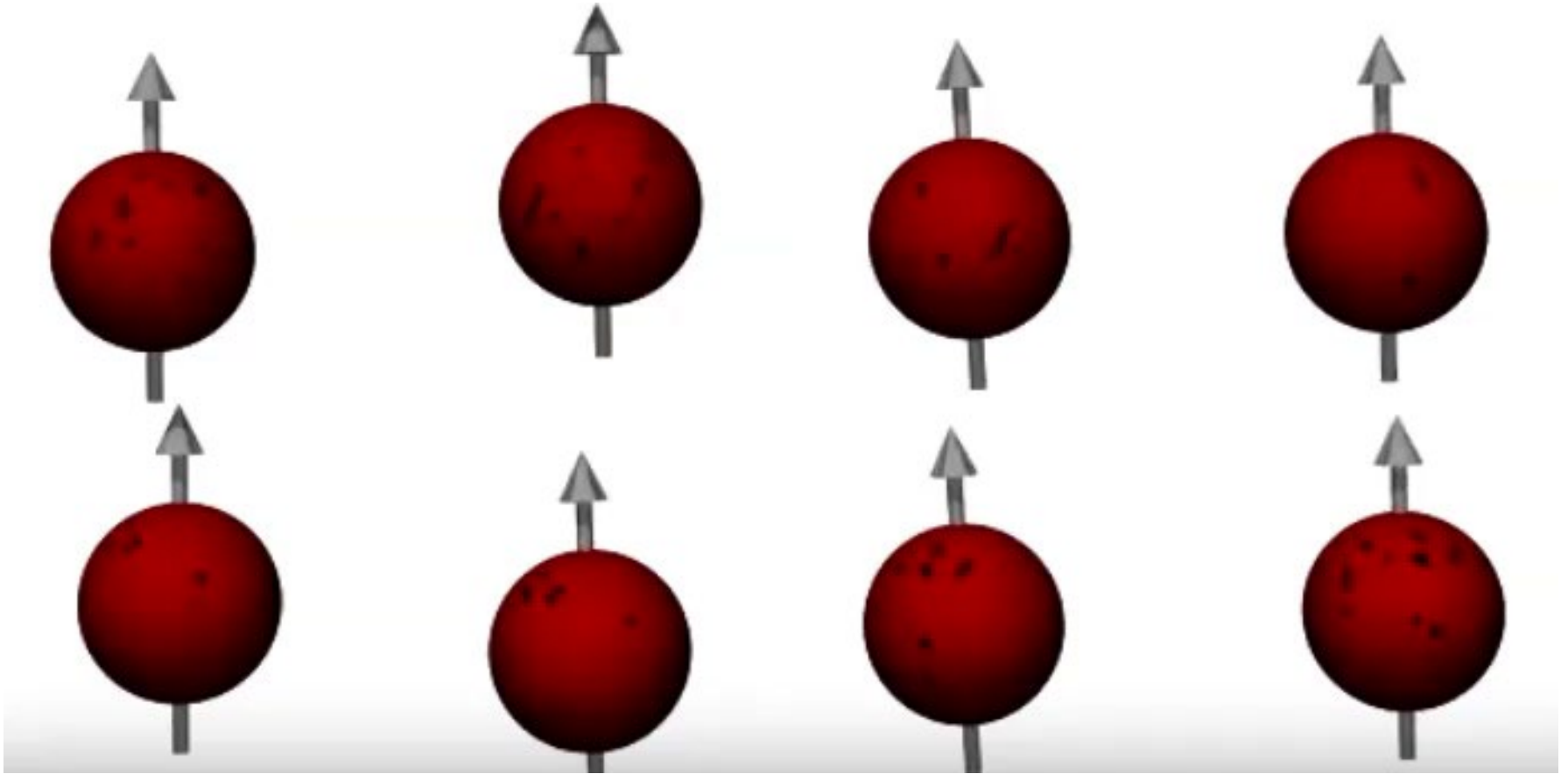


Inside Magnetic Bore

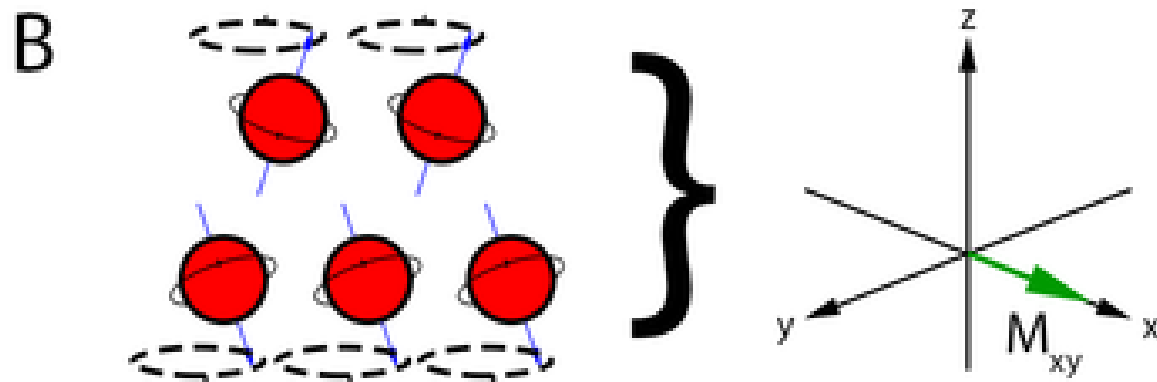
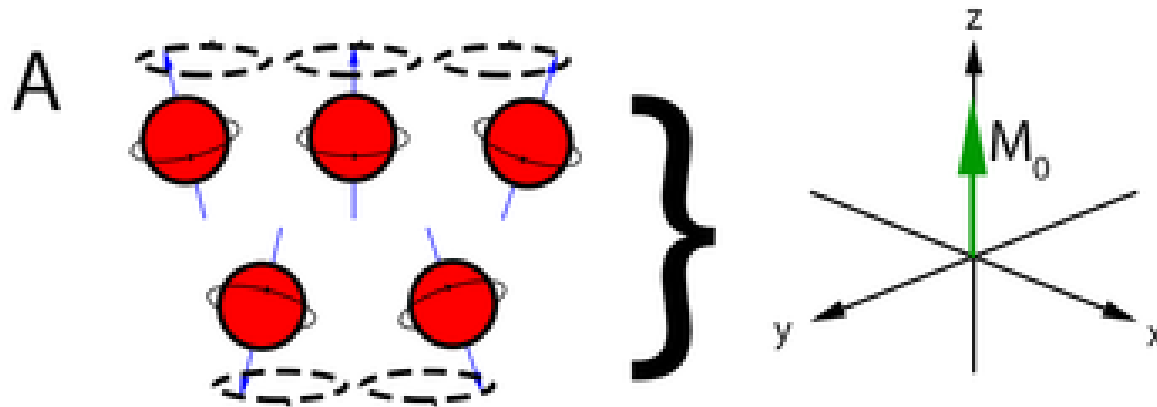
Precession



External RF Energy Added “Resonance”



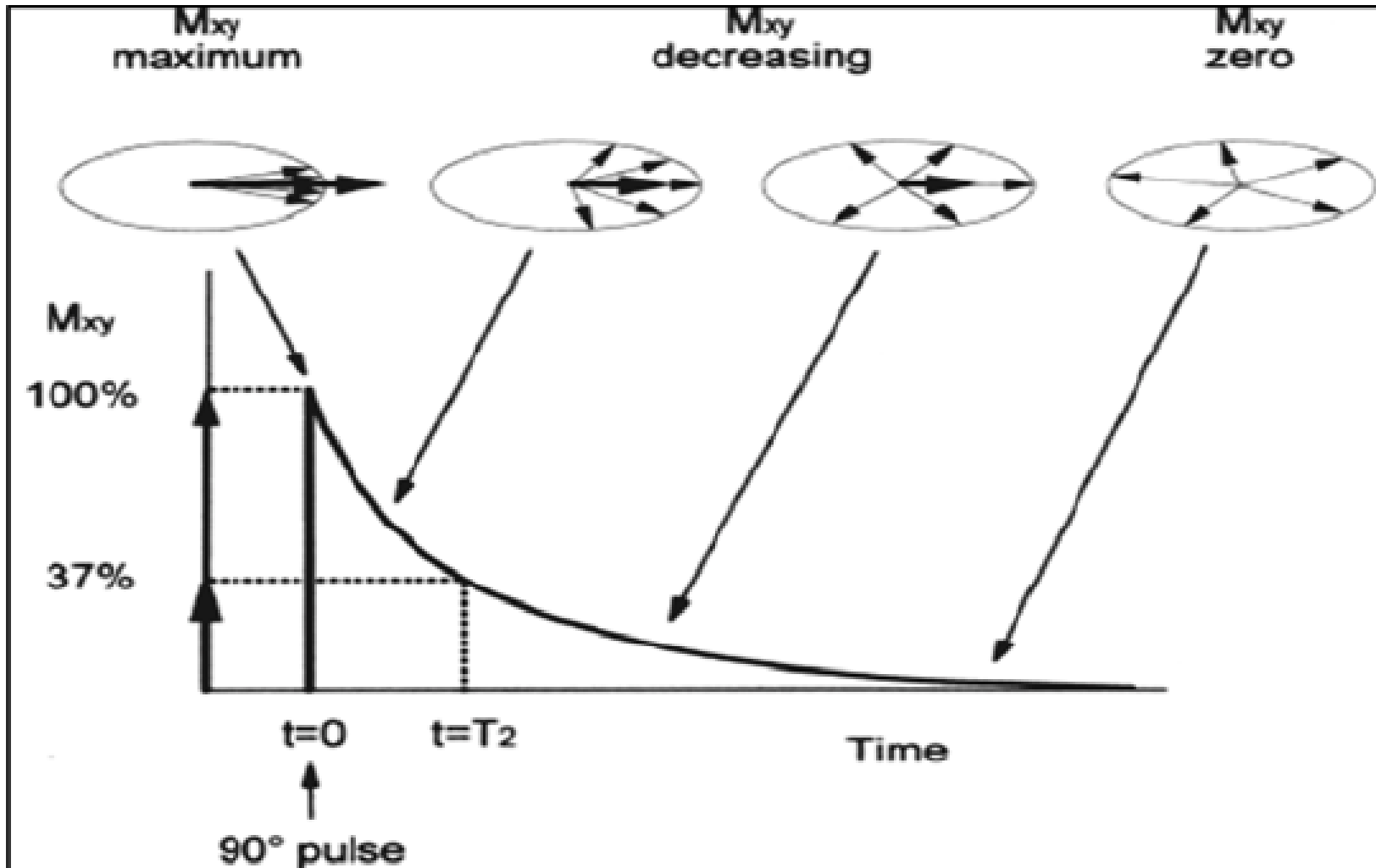
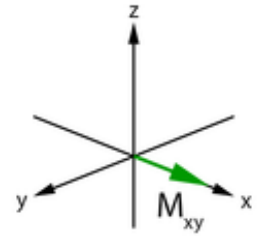
Broken Down Into Vectors



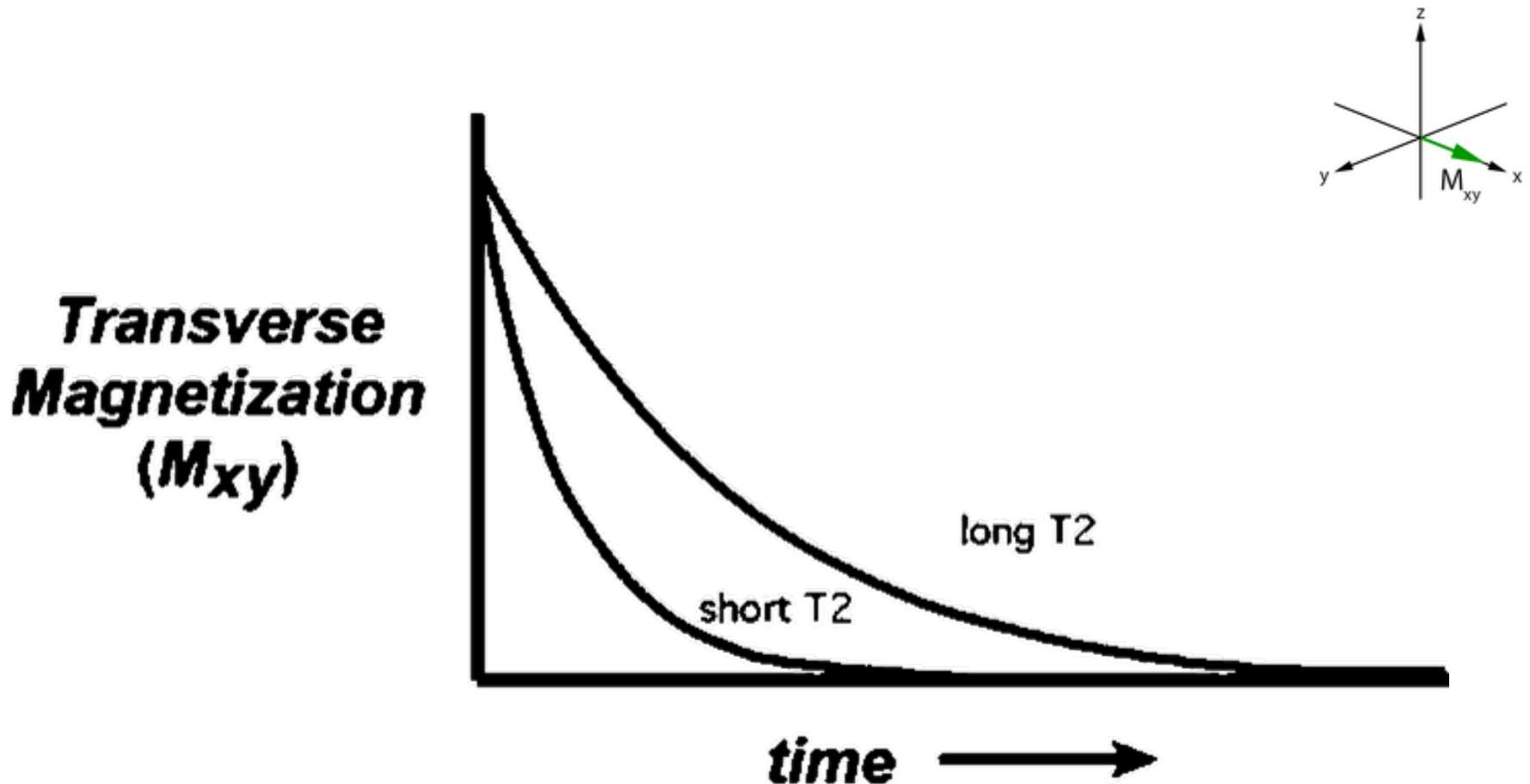
Microscopic

Macroscopic

Transverse Relaxation

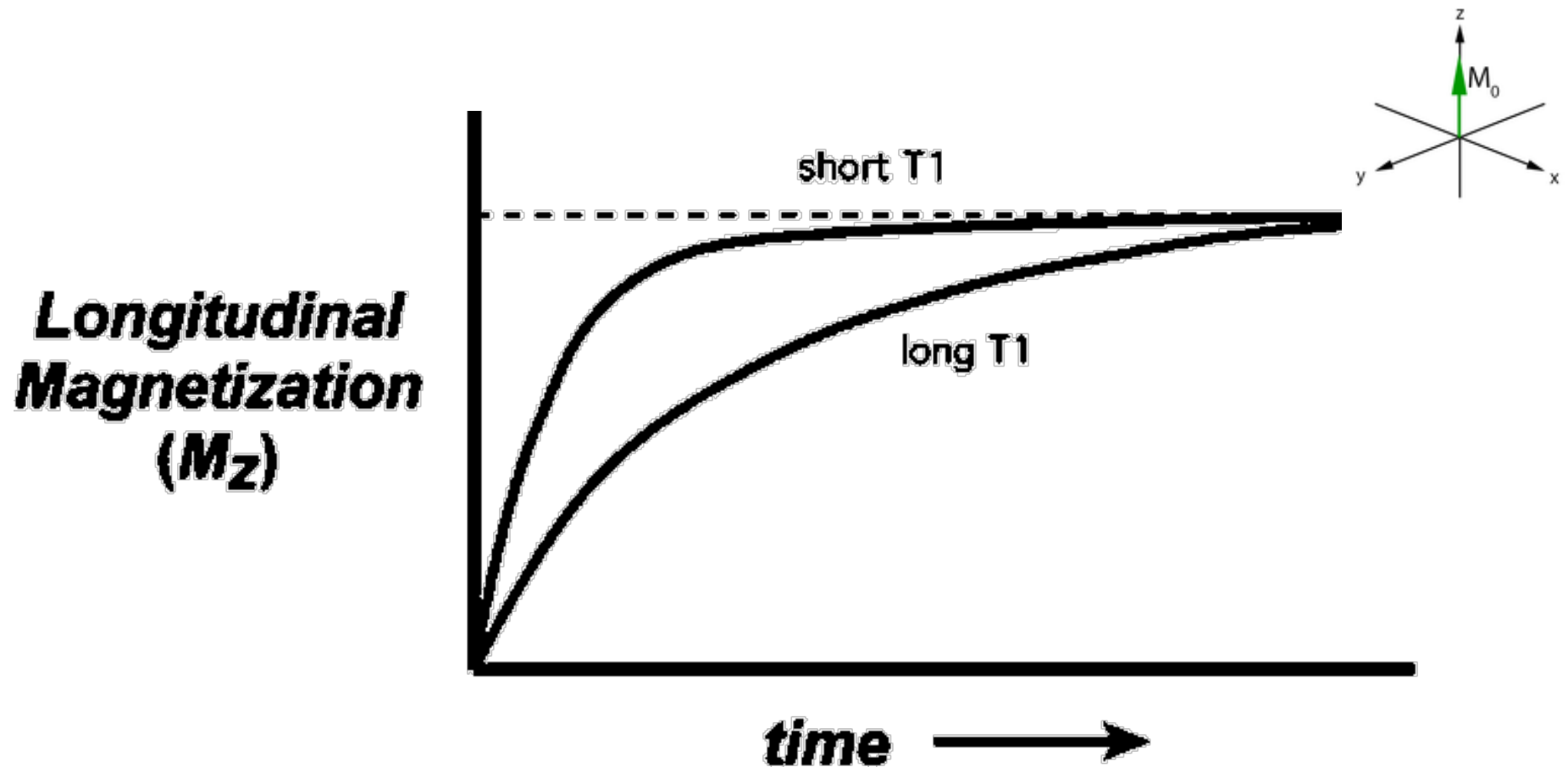


Transverse Relaxation – T2



Spin - Spin

Longitudinal Relaxation – T1



Spin - Lattice

90° rf pulse



90° rf pulse



TR



M_z

Imaging technique

TR

TE

T1 weighting

Short

Short

T2 weighting

Long

Long

T1

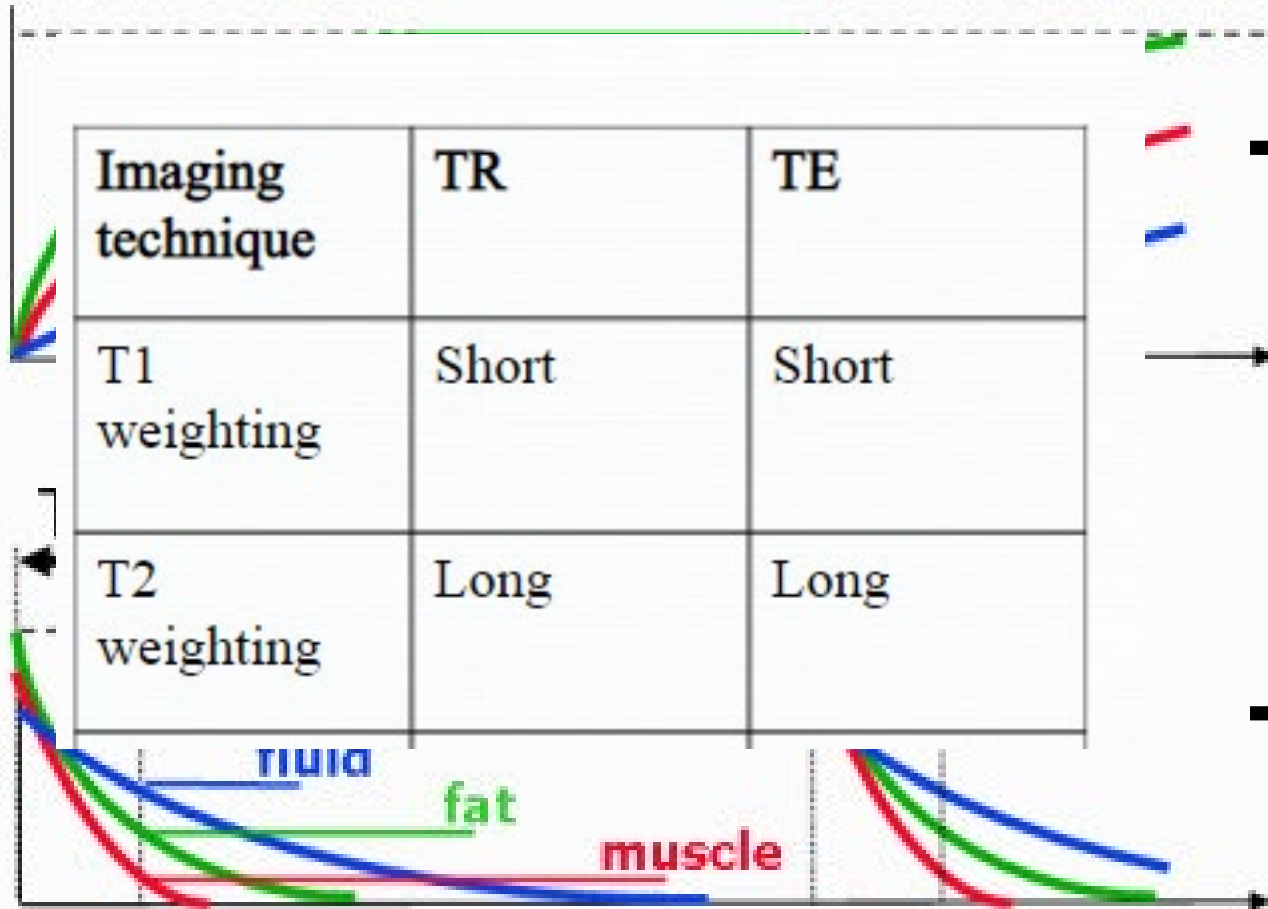
T2

M_{xy}
(signal)

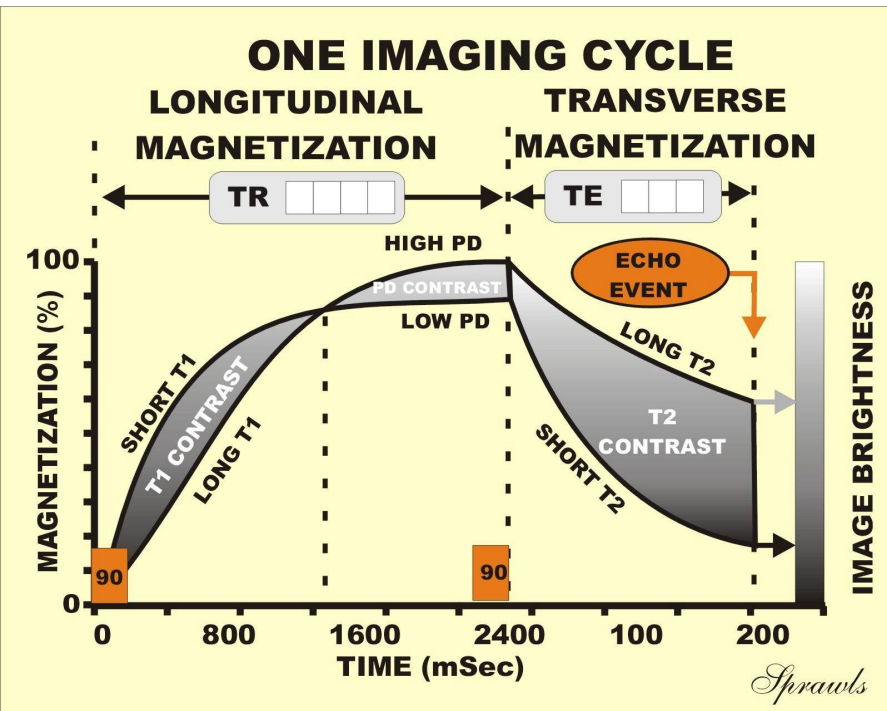
fluid

fat

muscle



You Know It!



Substance	T1	T2
Simple fluid	Dark	Bright
Edema	Dark	Bright
Proteinaceous/hemorrhagic fluid	Bright	Dark
Hemorrhage	Bright	Dark
Fat	Bright	Bright
Fibrosis	Dark	Dark
Iron/Calcification/Other metals	Dark	Dark