MRI Physics Basics

Nuclear magnetic resonance
Hydrogen protons align in magnetic field

Gradient fields
Spatial encoding of signal

K-space
Frequency domain data representation

Relaxation times (T1, T2)
Tissue-specific signal recovery

Signal equation
$S \propto \rho \cdot (1 - e^{(-TR/T1)}) \cdot e^{(-TE/T2)}$