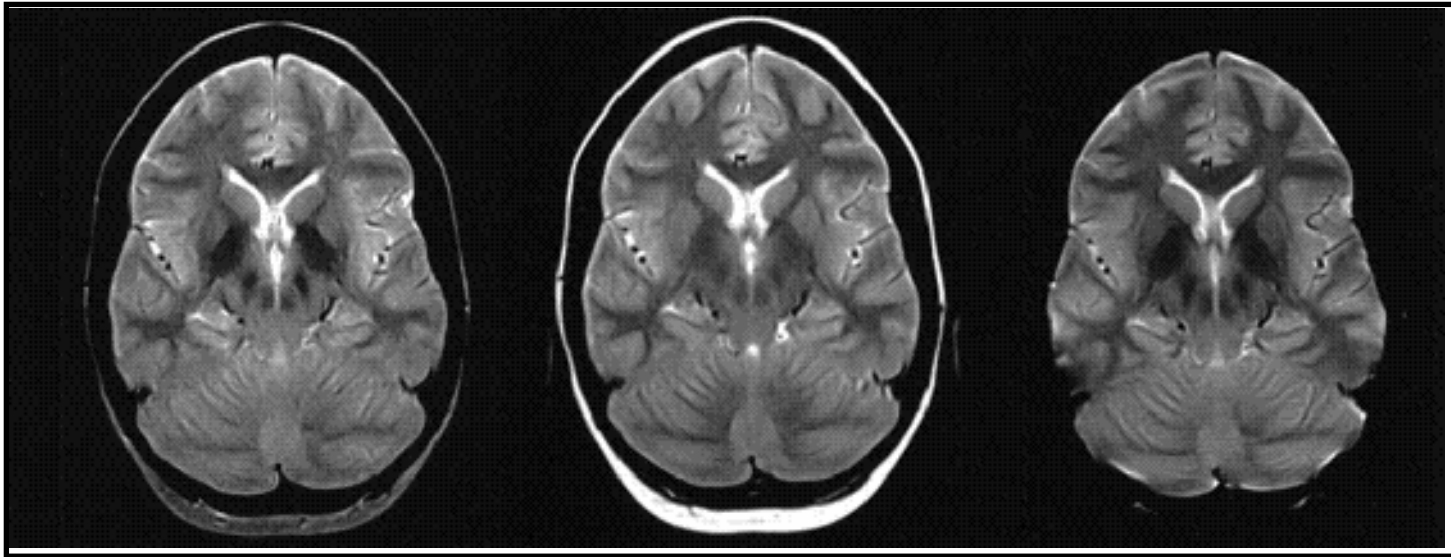


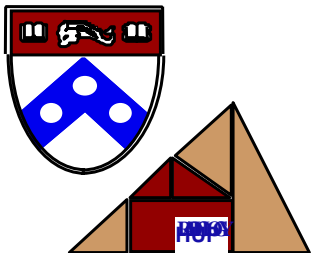
MR Pulse Sequences



CSE

TSE (FSE)

EPI



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Pulse Sequences

Content Specifications for the Advanced Level Examination in MRI by the ARRT “The MRI Boards”

Pulse Sequences (13 questions)

Spin Echo

- conventional spin echo
- fast spin echo (FSE)

Inversion Recovery

- STIR
- FLAIR

Gradient Recall Echo (GRE)

- conventional gradient echo
- fast gradient echo

Echo Planar Imaging (EPI)

Data Manipulation (6 questions)

- k-space Mapping & Filling
- Fourier Transformation
- Maximum Intensity Projection (MIP)
- Multiplanar Reconstruction

Special Procedures (8 questions)

MRA / MRV

- flow dynamics
- time-of-flight
- phase contrast
- contrast enhanced

CINE

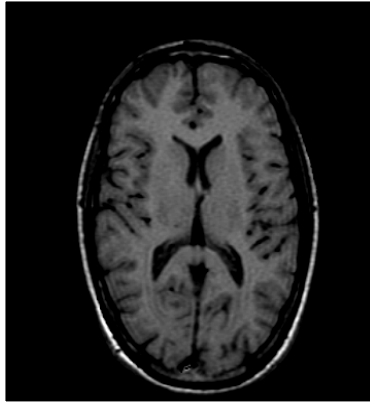
- cardiac
- musculoskeletal

Functional Techniques

- diffusion
- perfusion
- spectroscopy

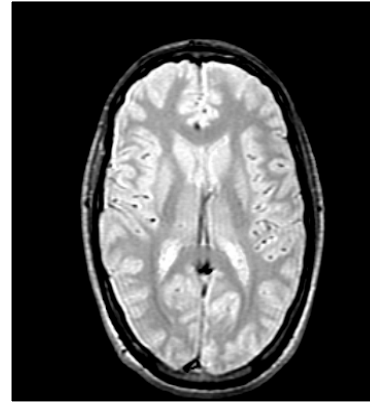
Dynamic Imaging

What is a Pulse Sequence?



T1 Weighted Image

SE
(TSE) FSE
IR
Fast IR



PD Weighted Image

SE
(TSE) FSE
FLAIR
Fast FLAIR
Looks like PD



T2 Weighted Image

SE
FSE
STIR
Fast STIR
Looks like T2

Spin echo family

Longer
Scan
times
Better
quality

Gradient echo family

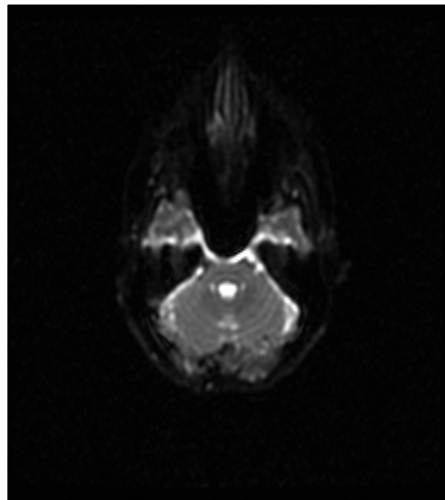
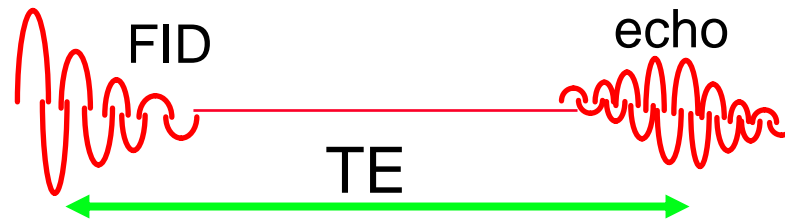
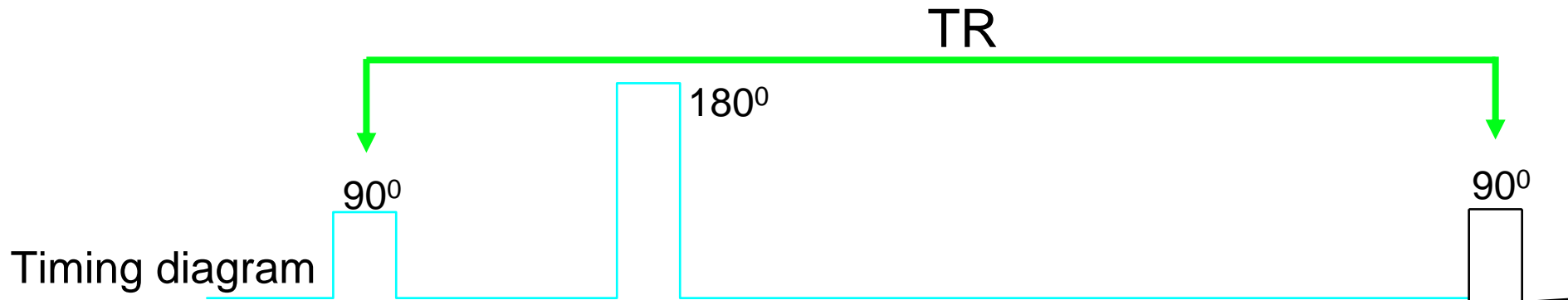
Faster
Scan
times
lower
quality

(T1 FFE) GrE spoiled
TOF MRA
Enhanced MRA

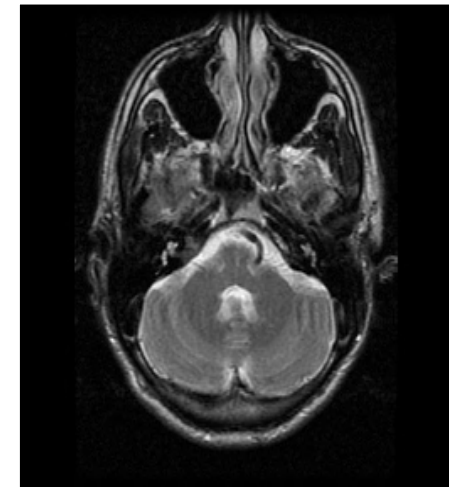
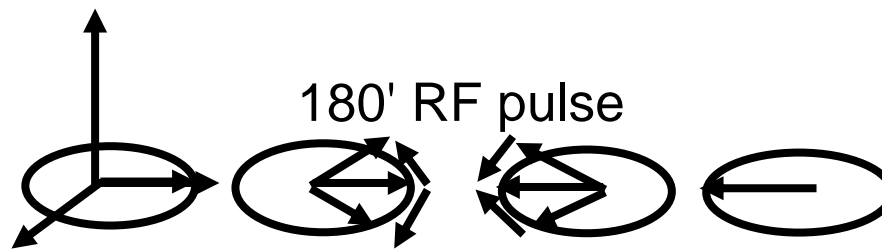
(PD FFE) GrE
PC MRA
EPI Flair

T2* Weighted Image
(T2* FFE) GrE
EPI
Perfusion
Diffusion

Timing Diagram for Spin Echo

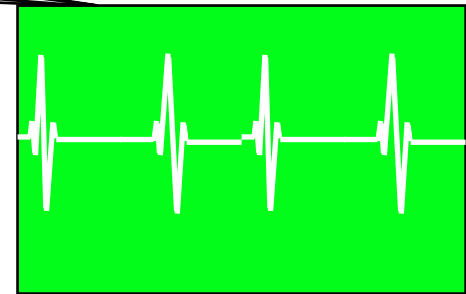
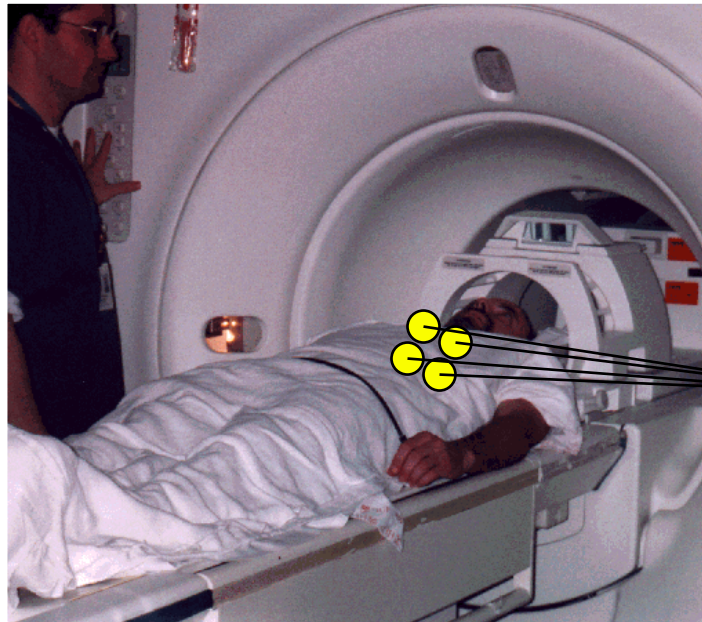


Axial T2* Image



Axial T2
spin echo Image

Do you know what this is?



How did we get this information?

Do you know what this is?

A Simple Timing diagram

