

MR Pulse Sequences: Protocol Design

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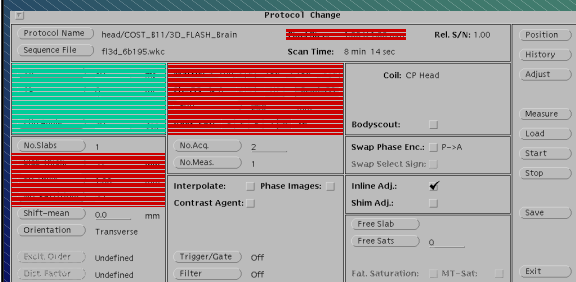


Overview

- 3D FLASH pulse sequence
 - pulse sequence details
 - specifications
- parameter space
 - repetition time TR
 - echo time TE
 - flip angle α
- protocol recommendations
 - slice positioning
 - choice of imaging coil



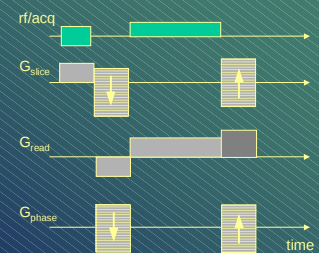
3D FLASH Pulse Sequence



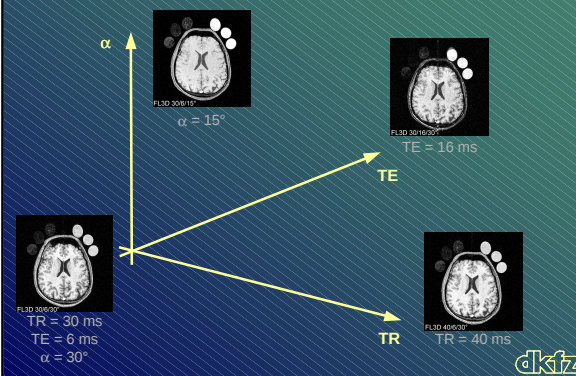
Sequence Characteristics

• 3D FLASH

- $TR_{min} = 20 \text{ ms}$
- $TE_{min} = 6 \text{ ms}$
- BW: 195 Hz/pixel
- no flow compensation
- gradient requirements:
 $G_{max} = 15 \text{ mT/m}$
 $t_{max} = 1 \text{ ms}$



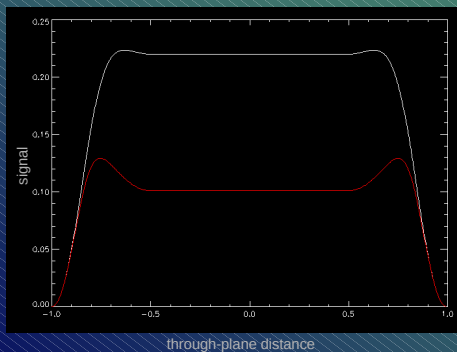
Parameter Space



Multiplanar Reformat

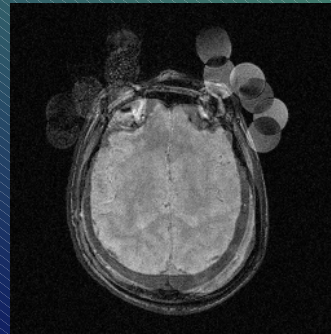


Edge Partitions



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Aliasing Artifacts



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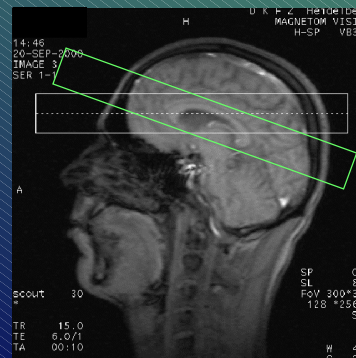
Coil B₁ Homogeneity

- RF-Excitation Profile
- Coil Sensitivity



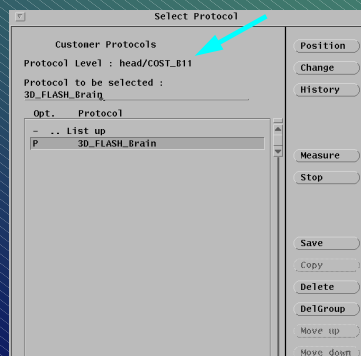
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Slice Positioning



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Pulse Sequence Protocol



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Conclusion

- protocol ready for shipping
- automatic installation on SIEMENS systems possible
- 2 acquisitions for reasonable SNR
- parameter space TR/TE/ α
- implementation on non-SIEMENS systems

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