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FIL Physics
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Vahid
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Darya_Frank_protocol
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\\USER\FIL Physics\Vahid\Darya\_Frank\_protocol\localizer

TA: 0:15 PM: REF Voxel size: 0.5×0.5×5.0 mmPAT: Off Rel. SNR: 1.00 : qfl

**Properties**

Prio recon	On
Load images to viewer	On
Inline movie	Off
Auto store images	On
Load images to stamp segments	On
Load images to graphic segments	On
Auto open inline display	Off
Auto close inline display	Off
Start measurement without further preparation	Off
Wait for user to start	Off
Start measurements	Single measurement

**Routine**

Slice group	1
Slices	1
Dist. factor	20 %
Position	Isocenter
Orientation	Sagittal
Phase enc. dir.	A >> P
Slice group	2
Slices	1
Dist. factor	20 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
Slice group	3
Slices	1
Dist. factor	20 %
Position	Isocenter
Orientation	Coronal
Phase enc. dir.	R >> L
AutoAlign	---
Phase oversampling	0 %
FoV read	250 mm
FoV phase	100.0 %
Slice thickness	5.0 mm
TR	8.6 ms
TE	3.69 ms
Averages	2
Concatenations	3
Filter	Elliptical filter
Coil elements	AC

**Contrast - Common**

TR	8.6 ms
TE	3.69 ms
TD	0 ms
MTC	Off
Magn. preparation	None
Flip angle	20 deg
Fat suppr.	None
Water suppr.	None
SWI	Off

**Contrast - Dynamic**

Averages	2
Averaging mode	Short term
Reconstruction	Magnitude
Measurements	1

**Contrast - Dynamic**

Multiple series	Each measurement
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**Resolution - Common**

FoV read	250 mm
FoV phase	100.0 %
Slice thickness	5.0 mm
Base resolution	256
Phase resolution	100 %
Phase partial Fourier	Off
Interpolation	On

**Resolution - iPAT**

PAT mode	None
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**Resolution - Filter Image**

Image Filter	Off
Distortion Corr.	Off
Prescan Normalize	Off
Normalize	Off
B1 filter	Off

**Resolution - Filter Rawdata**

Raw filter	Off
Elliptical filter	On

**Geometry - Common**

Slice group	1
Slices	1
Dist. factor	20 %
Position	Isocenter
Orientation	Sagittal
Phase enc. dir.	A >> P
Slice group	2
Slices	1
Dist. factor	20 %
Position	Isocenter
Orientation	Transversal
Phase enc. dir.	A >> P
Slice group	3
Slices	1
Dist. factor	20 %
Position	Isocenter
Orientation	Coronal
Phase enc. dir.	R >> L
FoV read	250 mm
FoV phase	100.0 %
Slice thickness	5.0 mm
TR	8.6 ms
Multi-slice mode	Sequential
Series	Interleaved
Concatenations	3

**Geometry - AutoAlign**

Slice group	1
Position	Isocenter
Orientation	Sagittal
Phase enc. dir.	A >> P
Slice group	2
Position	Isocenter
Orientation	Transversal

**Geometry - AutoAlign**

Phase enc. dir.	A >> P
Slice group	3
Position	Isocenter
Orientation	Coronal
Phase enc. dir.	R >> L
AutoAlign	---
Initial Position	Isocenter
L	0.0 mm
P	0.0 mm
H	0.0 mm
Initial Rotation	0.00 deg
Initial Orientation	Sagittal

**Geometry - Saturation**

Saturation mode	Standard
Fat suppr.	None
Water suppr.	None
Special sat.	None

**Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table position	H
Table position	0 mm
Inline Composing	Off

**Geometry - Tim CT**

Tim CT mode	Off
Slices	1
Slice thickness	5.0 mm
Dist. factor	20 %
FoV read	250 mm
FoV phase	100.0 %
Segments	1

**System - Miscellaneous**

Positioning mode	REF
Table position	F
Table position	0 mm
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H
Coil Combine Mode	Sum of Squares
Save uncombined	Off
Matrix Optimization	Off
AutoAlign	---
Coil Select Mode	Off - AutoCoilSelect

**System - Adjustments**

B0 Shim mode	Tune up
B1 Shim mode	TrueForm
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

**System - Adjust Volume**

Position	Isocenter
Orientation	Transversal
Rotation	0.00 deg
A >> P	263 mm
R >> L	350 mm
F >> H	350 mm
Reset	Off

**System - pTx Volumes**

B1 Shim mode	TrueForm
Excitation	Slice-sel.

**System - Tx/Rx**

Frequency 1H	297.211198 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

**Physio - Signal1**

1st Signal/Mode	None
TR	8.6 ms
Concatenations	3
Segments	1

**Physio - Cardiac**

Tagging	None
Magn. preparation	None
Fat suppr.	None
Dark blood	Off
FoV read	250 mm
FoV phase	100.0 %
Phase resolution	100 %

**Physio - PACE**

Resp. control	Off
Concatenations	3

**Inline - Common**

Subtract	Off
Measurements	1
StdDev	Off
Liver registration	Off
Save original images	On

**Inline - MIP**

MIP-Sag	Off
MIP-Cor	Off
MIP-Tra	Off
MIP-Time	Off
Save original images	On

**Inline - Soft Tissue**

Wash - In	Off
Wash - Out	Off
TTP	Off
PEI	Off
MIP - time	Off
Measurements	1

**Inline - Composing**

Inline Composing	Off
Distortion Corr.	Off

**Inline - MapIt**

Save original images	On
MapIt	None
Flip angle	20 deg
Measurements	1
Contrasts	1
TR	8.6 ms

**Inline - MapIt**

TE	3.69 ms
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**Sequence - Part 1**

Introduction	On
Dimension	2D
Phase stabilisation	Off
Asymmetric echo	Allowed
Contrasts	1
Flow comp.	No
Multi-slice mode	Sequential
Bandwidth	320 Hz/Px

**Sequence - Part 2**

Segments	1
Acoustic noise reduction	Active
RF pulse type	Normal
Gradient mode	Normal
Excitation	Slice-sel.
RF spoiling	On

**Sequence - Assistant**

Mode	Off
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\\USER\FIL Physics\Vahid\Darya\_Frank\_protocol\gre\_1441B\_B0\_4.0mm

TA: 0:38 PM: REF Voxel size: 4.0×4.0×4.0 mmPAT: Off Rel. SNR: 1.00 : WIP\_gre

**Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	Off
Auto store images	On
Load images to stamp segments	Off
Load images to graphic segments	Off
Auto open inline display	Off
Auto close inline display	Off
Start measurement without further preparation	Off
Wait for user to start	Off
Start measurements	Single measurement

**Routine**

Slab group	1
Slabs	1
Dist. factor	20 %
Position	R0.6 A10.8 F27.7 mm
Orientation	Sagittal
Phase enc. dir.	A >> P
AutoAlign	---
Phase oversampling	0 %
Slice oversampling	0.0 %
Slices per slab	44
FoV read	224 mm
FoV phase	100.0 %
Slice thickness	4.00 mm
TR	15.0 ms
TE 1	2.04 ms
TE 2	5.10 ms
Concatenations	1
Filter	None
Coil elements	AC

**Contrast - Common**

TR	15.0 ms
TE 1	2.04 ms
TE 2	5.10 ms
MTC	Off
Magn. preparation	None
Flip angle	8 deg
Fat suppr.	Water excit. fast
Water suppr.	None

**Contrast - Dynamic**

Reconstruction	Magn./Phase
Measurements	1
Multiple series	Each measurement

**Resolution - Common**

FoV read	224 mm
FoV phase	100.0 %
Slice thickness	4.00 mm
Base resolution	56
Phase resolution	100 %
Slice resolution	100 %
Phase partial Fourier	Off
Slice partial Fourier	Off
Interpolation	Off

**Resolution - iPAT**

PAT mode	None
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**Resolution - Filter Image**

Image Filter	Off
Distortion Corr.	Off
Prescan Normalize	Off
Normalize	Off
B1 filter	Off

**Resolution - Filter Rawdata**

Raw filter	Off
Elliptical filter	Off

**Geometry - Common**

Slab group	1
Slabs	1
Dist. factor	20 %
Position	R0.6 A10.8 F27.7 mm
Orientation	Sagittal
Phase enc. dir.	A >> P
Slice oversampling	0.0 %
Slices per slab	44
FoV read	224 mm
FoV phase	100.0 %
Slice thickness	4.00 mm
TR	15.0 ms
Multi-slice mode	Interleaved
Series	Interleaved
Concatenations	1

**Geometry - AutoAlign**

Slab group	1
Position	R0.6 A10.8 F27.7 mm
Orientation	Sagittal
Phase enc. dir.	A >> P
AutoAlign	---
Initial Position	R0.6 A10.8 F27.7
R	0.6 mm
A	10.8 mm
F	27.7 mm
Initial Rotation	0.00 deg
Initial Orientation	Sagittal

**Geometry - Saturation**

Saturation mode	Standard
Fat suppr.	Water excit. fast
Water suppr.	None
Special sat.	None

**Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table position	H
Table position	0 mm
Inline Composing	Off

**Geometry - Tim CT**

Tim CT mode	Off
Slabs	1
Slices per slab	44
Slice thickness	4.00 mm

**Geometry - Tim CT**

Dist. factor	20 %
FoV read	224 mm
FoV phase	100.0 %
Segments	1

**System - Miscellaneous**

Positioning mode	REF
Table position	F
Table position	0 mm
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H
Coil Combine Mode	Sum of Squares
Save uncombined	Off
Matrix Optimization	Off
AutoAlign	---
Coil Select Mode	Default

**System - Adjustments**

B0 Shim mode	Standard
B1 Shim mode	TrueForm
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

**System - Adjust Volume**

Position	R0.6 A10.8 F27.7 mm
Orientation	Sagittal
Rotation	0.00 deg
A >> P	224 mm
F >> H	224 mm
R >> L	176 mm
Reset	Off

**System - pTx Volumes**

B1 Shim mode	TrueForm
Excitation	Non-sel.

**System - Tx/Rx**

Frequency 1H	297.211198 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

**Physio - Signal1**

1st Signal/Mode	None
TR	15.0 ms
Concatenations	1
Segments	1

**Physio - Cardiac**

Tagging	None
Magn. preparation	None
Fat suppr.	Water excit. fast
Dark blood	Off
FoV read	224 mm
FoV phase	100.0 %
Phase resolution	100 %

**Physio - PACE**

Resp. control	Off
Concatenations	1

**Inline - Common**

Measurements	1
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**Inline - Composing**

Inline Composing	Off
Distortion Corr.	Off

**Sequence - Part 1**

Introduction	On
Dimension	3D
Elliptical scanning	Off
Phase stabilisation	Off
Asymmetric echo	Off
Contrasts	2
Flow comp. 1	No
Readout mode	Monopolar
Multi-slice mode	Interleaved
Bandwidth 1	500 Hz/Px
Bandwidth 2	500 Hz/Px

**Sequence - Part 2**

Segments	1
Acoustic noise reduction	None
RF pulse type	Normal
Gradient mode	Whisper
Excitation	Non-sel.
RF spoiling	On

**Sequence - Special**

Mode	B0 Measurment
Masking	Custom Mask
Phase Unwrapping	Spatial

**Sequence - Assistant**

Mode	Off
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\\USER\FIL Physics\Vahid\Darya\_Frank\_protocol\MP2RAGE\_WBIC\_0pt65\_PAT3\_PF68\_240Hz\_large  
rFOV

TA: 9:07 PM: REF Voxel size: 0.6×0.6×0.7 mmPAT: 3 Rel. SNR: 1.00 : tfl

### Properties

Prio recon	Off
Load images to viewer	On
Inline movie	Off
Auto store images	On
Load images to stamp segments	Off
Load images to graphic segments	Off
Auto open inline display	Off
Auto close inline display	Off
Start measurement without further preparation	Off
Wait for user to start	Off
Start measurements	Single measurement

### Routine

Slab group	1
Slabs	1
Dist. factor	50 %
Position	R1.2 A20.2 F35.4 mm
Orientation	Sagittal
Phase enc. dir.	A >> P
AutoAlign	Head > Basis
Phase oversampling	0 %
Slice oversampling	0.0 %
Slices per slab	240
FoV read	220 mm
FoV phase	100.0 %
Slice thickness	0.65 mm
TR	5000.0 ms
TE	2.54 ms
Averages	1
Concatenations	1
Filter	None
Coil elements	AC

### Contrast - Common

TR	5000.0 ms
TE	2.54 ms
Magn. preparation	Non-sel. IR
TI 1	900 ms
TI 2	2750 ms
Flip angle 1	5.0 deg
Flip angle 2	3.0 deg
Fat suppr.	Water excit. normal
Water suppr.	None

### Contrast - Dynamic

Averages	1
Averaging mode	Long term
Reconstruction	Magnitude
Measurements	1
Multiple series	Each measurement

### Resolution - Common

FoV read	220 mm
FoV phase	100.0 %
Slice thickness	0.65 mm
Base resolution	340
Phase resolution	100 %
Slice resolution	100 %

### Resolution - Common

Phase partial Fourier	6/8
Slice partial Fourier	6/8
Interpolation	Off

### Resolution - iPAT

PAT mode	GRAPPA
Accel. factor PE	3
Ref. lines PE	36
Accel. factor 3D	1
Reference scan mode	Integrated

### Resolution - Filter Image

Image Filter	Off
Distortion Corr.	Off
Prescan Normalize	Off
Normalize	Off
B1 filter	Off

### Resolution - Filter Rawdata

Raw filter	Off
Elliptical filter	Off

### Geometry - Common

Slab group	1
Slabs	1
Dist. factor	50 %
Position	R1.2 A20.2 F35.4 mm
Orientation	Sagittal
Phase enc. dir.	A >> P
Slice oversampling	0.0 %
Slices per slab	240
FoV read	220 mm
FoV phase	100.0 %
Slice thickness	0.65 mm
TR	5000.0 ms
Multi-slice mode	Single shot
Series	Interleaved
Concatenations	1

### Geometry - AutoAlign

Slab group	1
Position	R1.2 A20.2 F35.4 mm
Orientation	Sagittal
Phase enc. dir.	A >> P
AutoAlign	Head > Basis
Initial Position	R1.2 A20.2 F35.4
R	1.2 mm
A	20.2 mm
F	35.4 mm
Initial Rotation	0.00 deg
Initial Orientation	Sagittal

### Geometry - Navigator

### Geometry - Tim Planning Suite

Set-n-Go Protocol	Off
Table position	H
Table position	0 mm

**Geometry - Tim Planning Suite**

Inline Composing	Off
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**System - Miscellaneous**

Positioning mode	REF
Table position	H
Table position	0 mm
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H
Coil Combine Mode	Sum of Squares
Save uncombined	Off
Matrix Optimization	Off
AutoAlign	Head > Basis
Coil Select Mode	Off - All

**System - Adjustments**

B0 Shim mode	Brain
B1 Shim mode	TrueForm
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

**System - Adjust Volume**

Position	R1.2 A20.2 F35.4 mm
Orientation	Sagittal
Rotation	0.00 deg
A >> P	220 mm
F >> H	220 mm
R >> L	156 mm
Reset	Off

**System - pTx Volumes**

B1 Shim mode	TrueForm
Excitation	Non-sel.

**System - Tx/Rx**

Frequency 1H	297.211198 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

**Physio - Signal1**

1st Signal/Mode	None
TR	5000.0 ms
Concatenations	1

**Physio - Cardiac**

Magn. preparation	Non-sel. IR
TI 1	900 ms
TI 2	2750 ms
Fat suppr.	Water excit. normal
Dark blood	Off
FoV read	220 mm
FoV phase	100.0 %
Phase resolution	100 %

**Physio - PACE**

Resp. control	Off
Concatenations	1

**Inline - Common**

Subtract	Off
Measurements	1
StdDev	Off
Save original images	On

**Inline - MIP**

MIP-Sag	Off
MIP-Cor	Off
MIP-Tra	Off
MIP-Time	Off
Save original images	On

**Inline - Composing**

Inline Composing	Off
Distortion Corr.	Off

**Inline - MapIt**

Save original images	On
MapIt	T1 map
Flip angle 1	5.0 deg
Flip angle 2	3.0 deg
Measurements	1
TR	5000.0 ms
TE	2.54 ms

**Sequence - Part 1**

Introduction	On
Dimension	3D
Elliptical scanning	Off
Reordering	Linear
Asymmetric echo	Allowed
Flow comp.	No
Multi-slice mode	Single shot
Echo spacing	7.1 ms
Bandwidth	240 Hz/Px

**Sequence - Part 2**

RF pulse type	Fast
Gradient mode	Fast
Excitation	Non-sel.
RF spoiling	On
Incr. Gradient spoiling	Off
Turbo factor	180

**Sequence - Assistant**

Mode	Off
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\\USER\FIL Physics\Vahid\Darya\_Frank\_protocol\cmrr\_mbep2d\_1p25\_blipRev

TA: 1:16 PM: REF Voxel size: 1.3×1.3×1.3 mmPAT: 3 Rel. SNR: 1.00 : epfid

**Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	Off
Auto store images	On
Load images to stamp segments	Off
Load images to graphic segments	Off
Auto open inline display	Off
Auto close inline display	Off
Start measurement without further preparation	Off
Wait for user to start	Off
Start measurements	Single measurement

**Routine**

Slice group	1
Slices	78
Dist. factor	0 %
Position	L1.9 A3.4 F2.6 mm
Orientation	T > C-31.8
Phase enc. dir.	A >> P
AutoAlign	---
Phase oversampling	0 %
FoV read	200 mm
FoV phase	100.0 %
Slice thickness	1.25 mm
TR	2100 ms
TE	19.00 ms
Multi-band accel. factor	2
Filter	None
Coil elements	AC

**Contrast - Common**

TR	2100 ms
TE	19.00 ms
MTC	Off
Magn. preparation	None
Flip angle	70 deg
Fat suppr.	Fat sat.

**Contrast - Dynamic**

Averaging mode	Long term
Reconstruction	Magnitude
Measurements	4
Delay in TR	0 ms
Multiple series	Off

**Resolution - Common**

FoV read	200 mm
FoV phase	100.0 %
Slice thickness	1.25 mm
Base resolution	160
Phase resolution	100 %
Phase partial Fourier	6/8
Interpolation	Off

**Resolution - iPAT**

PAT mode	GRAPPA
Accel. factor PE	3
Ref. lines PE	78
Reference scan mode	GRE

**Resolution - Filter Image**

Distortion Corr.	Off
Prescan Normalize	Off

**Resolution - Filter Rawdata**

Raw filter	Off
Elliptical filter	Off
Hamming	Off

**Geometry - Common**

Slice group	1
Slices	78
Dist. factor	0 %
Position	L1.9 A3.4 F2.6 mm
Orientation	T > C-31.8
Phase enc. dir.	A >> P
FoV read	200 mm
FoV phase	100.0 %
Slice thickness	1.25 mm
TR	2100 ms
Multi-slice mode	Interleaved
Series	Interleaved
Multi-band accel. factor	2

**Geometry - AutoAlign**

Slice group	1
Position	L1.9 A3.4 F2.6 mm
Orientation	T > C-31.8
Phase enc. dir.	A >> P
AutoAlign	---
Initial Position	L1.9 A3.4 F2.6
L	1.9 mm
A	3.4 mm
F	2.6 mm
Initial Rotation	-1.83 deg
Initial Orientation	T > C
T > C	-31.8
> S	0.0

**Geometry - Saturation**

Fat suppr.	Fat sat.
Special sat.	None

**Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table position	H
Table position	0 mm
Inline Composing	Off

**System - Miscellaneous**

Positioning mode	REF
Table position	H
Table position	0 mm
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H
Coil Combine Mode	Sum of Squares
Matrix Optimization	Off
AutoAlign	---
Coil Select Mode	Default

**System - Adjustments**

B0 Shim mode	Brain
B1 Shim mode	TrueForm
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

**System - Adjust Volume**

Position	L1.9 A3.4 F2.6 mm
Orientation	T > C-31.8
Rotation	-1.83 deg
A >> P	200 mm
R >> L	200 mm
F >> H	98 mm
Reset	Off

**System - pTx Volumes**

B1 Shim mode	TrueForm
Excitation	Standard

**System - Tx/Rx**

Frequency 1H	297.211198 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

**Physio - Signal1**

1st Signal/Mode	None
TR	2100 ms
Multi-band accel. factor	2

**BOLD**

GLM Statistics	Off
Dynamic t-maps	Off
Ignore meas. at start	0
Ignore after transition	0
Model transition states	On
Temp. highpass filter	On
Threshold	4.00
Paradigm size	20
Meas[1]	Baseline
Meas[2]	Baseline
Meas[3]	Baseline
Meas[4]	Baseline
Meas[5]	Baseline
Meas[6]	Baseline
Meas[7]	Baseline
Meas[8]	Baseline
Meas[9]	Baseline
Meas[10]	Baseline
Meas[11]	Active
Meas[12]	Active
Meas[13]	Active
Meas[14]	Active
Meas[15]	Active
Meas[16]	Active
Meas[17]	Active
Meas[18]	Active
Meas[19]	Active
Meas[20]	Active
Motion correction	Off
Spatial filter	Off

**BOLD**

Measurements	4
Delay in TR	0 ms
Multiple series	Off

**Sequence - Part 1**

Introduction	On
Contrasts	1
Flow comp.	No
Multi-slice mode	Interleaved
Free echo spacing	On
Echo spacing	0.78 ms
Bandwidth	1488 Hz/Px

**Sequence - Part 2**

EPI factor	160
Gradient mode	Fast
Excitation	Standard
RF spoiling	Off

**Sequence - Special**

Excite pulse duration	6400 us
Single-band images	On
MB LeakBlock kernel	On
MB dual kernel	Off
MB RF phase scramble	Off
SENSE1 coil combine	Off
Invert RO/PE polarity	Off
PF omits higher k-space	Off
Disable freq. update	Off
Force equal slice timing	Off
Online multi-band recon.	Online
FFT scale factor	1.00
Fat saturation FA	110.0 deg
GRE iPAT ref. FA	12.0 deg
Physio recording	Off
Triggering scheme	Standard

\\USER\FIL Physics\Ahid\Darya\_Frank\_protocol\cmrr\_mbep2d\_1p25\_run1\_PA

TA: 15:31 PM: FIX Voxel size: 1.3×1.3×1.3 mmPAT: 3 Rel. SNR: 1.00 : efpid

**Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	Off
Auto store images	On
Load images to stamp segments	Off
Load images to graphic segments	Off
Auto open inline display	Off
Auto close inline display	Off
Start measurement without further preparation	Off
Wait for user to start	Off
Start measurements	Single measurement

**Routine**

Slice group	1
Slices	78
Dist. factor	0 %
Position	L1.9 A3.4 F2.6 mm
Orientation	T > C-31.8
Phase enc. dir.	A >> P
AutoAlign	---
Phase oversampling	0 %
FoV read	200 mm
FoV phase	100.0 %
Slice thickness	1.25 mm
TR	2100 ms
TE	19.00 ms
Multi-band accel. factor	2
Filter	None
Coil elements	AC

**Contrast - Common**

TR	2100 ms
TE	19.00 ms
MTC	Off
Magn. preparation	None
Flip angle	70 deg
Fat suppr.	Fat sat.

**Contrast - Dynamic**

Averaging mode	Long term
Reconstruction	Magnitude
Measurements	411
Delay in TR	0 ms
Multiple series	Off

**Resolution - Common**

FoV read	200 mm
FoV phase	100.0 %
Slice thickness	1.25 mm
Base resolution	160
Phase resolution	100 %
Phase partial Fourier	6/8
Interpolation	Off

**Resolution - iPAT**

PAT mode	GRAPPA
Accel. factor PE	3
Ref. lines PE	78
Reference scan mode	GRE

**Resolution - Filter Image**

Distortion Corr.	Off
Prescan Normalize	Off

**Resolution - Filter Rawdata**

Raw filter	Off
Elliptical filter	Off
Hamming	Off

**Geometry - Common**

Slice group	1
Slices	78
Dist. factor	0 %
Position	L1.9 A3.4 F2.6 mm
Orientation	T > C-31.8
Phase enc. dir.	A >> P
FoV read	200 mm
FoV phase	100.0 %
Slice thickness	1.25 mm
TR	2100 ms
Multi-slice mode	Interleaved
Series	Interleaved
Multi-band accel. factor	2

**Geometry - AutoAlign**

Slice group	1
Position	L1.9 A3.4 F2.6 mm
Orientation	T > C-31.8
Phase enc. dir.	A >> P
AutoAlign	---
Initial Position	L1.9 A3.4 F2.6
L	1.9 mm
A	3.4 mm
F	2.6 mm
Initial Rotation	-1.83 deg
Initial Orientation	T > C
T > C	-31.8
> S	0.0

**Geometry - Saturation**

Fat suppr.	Fat sat.
Special sat.	None

**Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table position	H
Table position	0 mm
Inline Composing	Off

**System - Miscellaneous**

Positioning mode	FIX
Table position	H
Table position	0 mm
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H
Coil Combine Mode	Sum of Squares
Matrix Optimization	Off
AutoAlign	---
Coil Select Mode	Default

**System - Adjustments**

B0 Shim mode	Brain
B1 Shim mode	TrueForm
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

**System - Adjust Volume**

Position	L1.9 A3.4 F2.6 mm
Orientation	T > C-31.8
Rotation	-1.83 deg
A >> P	200 mm
R >> L	200 mm
F >> H	98 mm
Reset	Off

**System - pTx Volumes**

B1 Shim mode	TrueForm
Excitation	Standard

**System - Tx/Rx**

Frequency 1H	297.211198 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

**Physio - Signal1**

1st Signal/Mode	None
TR	2100 ms
Multi-band accel. factor	2

**BOLD**

GLM Statistics	Off
Dynamic t-maps	Off
Ignore meas. at start	0
Ignore after transition	0
Model transition states	On
Temp. highpass filter	On
Threshold	4.00
Paradigm size	20
Meas[1]	Baseline
Meas[2]	Baseline
Meas[3]	Baseline
Meas[4]	Baseline
Meas[5]	Baseline
Meas[6]	Baseline
Meas[7]	Baseline
Meas[8]	Baseline
Meas[9]	Baseline
Meas[10]	Baseline
Meas[11]	Active
Meas[12]	Active
Meas[13]	Active
Meas[14]	Active
Meas[15]	Active
Meas[16]	Active
Meas[17]	Active
Meas[18]	Active
Meas[19]	Active
Meas[20]	Active
Motion correction	Off
Spatial filter	Off

**BOLD**

Measurements	411
Delay in TR	0 ms
Multiple series	Off

**Sequence - Part 1**

Introduction	On
Contrasts	1
Flow comp.	No
Multi-slice mode	Interleaved
Free echo spacing	On
Echo spacing	0.78 ms
Bandwidth	1488 Hz/Px

**Sequence - Part 2**

EPI factor	160
Gradient mode	Fast
Excitation	Standard
RF spoiling	Off

**Sequence - Special**

Excite pulse duration	6400 us
Single-band images	On
MB LeakBlock kernel	On
MB dual kernel	Off
MB RF phase scramble	Off
SENSE1 coil combine	Off
Invert RO/PE polarity	On
PF omits higher k-space	Off
Disable freq. update	Off
Force equal slice timing	Off
Online multi-band recon.	Online
FFT scale factor	1.00
Fat saturation FA	110.0 deg
GRE iPAT ref. FA	12.0 deg
Physio recording	Off
Triggering scheme	Standard

\\USER\FIL Physics\Vahid\Darya\_Frank\_protocol\cmrr\_mbep2d\_1p25\_blipRev

TA: 1:16 PM: REF Voxel size: 1.3×1.3×1.3 mmPAT: 3 Rel. SNR: 1.00 : epfid

**Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	Off
Auto store images	On
Load images to stamp segments	Off
Load images to graphic segments	Off
Auto open inline display	Off
Auto close inline display	Off
Start measurement without further preparation	Off
Wait for user to start	Off
Start measurements	Single measurement

**Routine**

Slice group	1
Slices	78
Dist. factor	0 %
Position	L1.9 A3.4 F2.6 mm
Orientation	T > C-31.8
Phase enc. dir.	A >> P
AutoAlign	---
Phase oversampling	0 %
FoV read	200 mm
FoV phase	100.0 %
Slice thickness	1.25 mm
TR	2100 ms
TE	19.00 ms
Multi-band accel. factor	2
Filter	None
Coil elements	AC

**Contrast - Common**

TR	2100 ms
TE	19.00 ms
MTC	Off
Magn. preparation	None
Flip angle	70 deg
Fat suppr.	Fat sat.

**Contrast - Dynamic**

Averaging mode	Long term
Reconstruction	Magnitude
Measurements	4
Delay in TR	0 ms
Multiple series	Off

**Resolution - Common**

FoV read	200 mm
FoV phase	100.0 %
Slice thickness	1.25 mm
Base resolution	160
Phase resolution	100 %
Phase partial Fourier	6/8
Interpolation	Off

**Resolution - iPAT**

PAT mode	GRAPPA
Accel. factor PE	3
Ref. lines PE	78
Reference scan mode	GRE

**Resolution - Filter Image**

Distortion Corr.	Off
Prescan Normalize	Off

**Resolution - Filter Rawdata**

Raw filter	Off
Elliptical filter	Off
Hamming	Off

**Geometry - Common**

Slice group	1
Slices	78
Dist. factor	0 %
Position	L1.9 A3.4 F2.6 mm
Orientation	T > C-31.8
Phase enc. dir.	A >> P
FoV read	200 mm
FoV phase	100.0 %
Slice thickness	1.25 mm
TR	2100 ms
Multi-slice mode	Interleaved
Series	Interleaved
Multi-band accel. factor	2

**Geometry - AutoAlign**

Slice group	1
Position	L1.9 A3.4 F2.6 mm
Orientation	T > C-31.8
Phase enc. dir.	A >> P
AutoAlign	---
Initial Position	L1.9 A3.4 F2.6
L	1.9 mm
A	3.4 mm
F	2.6 mm
Initial Rotation	-1.83 deg
Initial Orientation	T > C
T > C	-31.8
> S	0.0

**Geometry - Saturation**

Fat suppr.	Fat sat.
Special sat.	None

**Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table position	H
Table position	0 mm
Inline Composing	Off

**System - Miscellaneous**

Positioning mode	REF
Table position	H
Table position	0 mm
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H
Coil Combine Mode	Sum of Squares
Matrix Optimization	Off
AutoAlign	---
Coil Select Mode	Default

**System - Adjustments**

B0 Shim mode	Brain
B1 Shim mode	TrueForm
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

**System - Adjust Volume**

Position	L1.9 A3.4 F2.6 mm
Orientation	T > C-31.8
Rotation	-1.83 deg
A >> P	200 mm
R >> L	200 mm
F >> H	98 mm
Reset	Off

**System - pTx Volumes**

B1 Shim mode	TrueForm
Excitation	Standard

**System - Tx/Rx**

Frequency 1H	297.211198 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

**Physio - Signal1**

1st Signal/Mode	None
TR	2100 ms
Multi-band accel. factor	2

**BOLD**

GLM Statistics	Off
Dynamic t-maps	Off
Ignore meas. at start	0
Ignore after transition	0
Model transition states	On
Temp. highpass filter	On
Threshold	4.00
Paradigm size	20
Meas[1]	Baseline
Meas[2]	Baseline
Meas[3]	Baseline
Meas[4]	Baseline
Meas[5]	Baseline
Meas[6]	Baseline
Meas[7]	Baseline
Meas[8]	Baseline
Meas[9]	Baseline
Meas[10]	Baseline
Meas[11]	Active
Meas[12]	Active
Meas[13]	Active
Meas[14]	Active
Meas[15]	Active
Meas[16]	Active
Meas[17]	Active
Meas[18]	Active
Meas[19]	Active
Meas[20]	Active
Motion correction	Off
Spatial filter	Off

**BOLD**

Measurements	4
Delay in TR	0 ms
Multiple series	Off

**Sequence - Part 1**

Introduction	On
Contrasts	1
Flow comp.	No
Multi-slice mode	Interleaved
Free echo spacing	On
Echo spacing	0.78 ms
Bandwidth	1488 Hz/Px

**Sequence - Part 2**

EPI factor	160
Gradient mode	Fast
Excitation	Standard
RF spoiling	Off

**Sequence - Special**

Excite pulse duration	6400 us
Single-band images	On
MB LeakBlock kernel	On
MB dual kernel	Off
MB RF phase scramble	Off
SENSE1 coil combine	Off
Invert RO/PE polarity	Off
PF omits higher k-space	Off
Disable freq. update	Off
Force equal slice timing	Off
Online multi-band recon.	Online
FFT scale factor	1.00
Fat saturation FA	110.0 deg
GRE iPAT ref. FA	12.0 deg
Physio recording	Off
Triggering scheme	Standard

\\USER\FIL Physics\Vahid\Darya\_Frank\_protocol\cmrr\_mbep2d\_1p25\_run1\_PA

TA: 13:29 PM: FIX Voxel size: 1.3×1.3×1.3 mmPAT: 3 Rel. SNR: 1.00 : efpid

**Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	Off
Auto store images	On
Load images to stamp segments	Off
Load images to graphic segments	Off
Auto open inline display	Off
Auto close inline display	Off
Start measurement without further preparation	Off
Wait for user to start	Off
Start measurements	Single measurement

**Routine**

Slice group	1
Slices	78
Dist. factor	0 %
Position	L1.9 A3.4 F2.6 mm
Orientation	T > C-31.8
Phase enc. dir.	A >> P
AutoAlign	---
Phase oversampling	0 %
FoV read	200 mm
FoV phase	100.0 %
Slice thickness	1.25 mm
TR	2100 ms
TE	19.00 ms
Multi-band accel. factor	2
Filter	None
Coil elements	AC

**Contrast - Common**

TR	2100 ms
TE	19.00 ms
MTC	Off
Magn. preparation	None
Flip angle	70 deg
Fat suppr.	Fat sat.

**Contrast - Dynamic**

Averaging mode	Long term
Reconstruction	Magnitude
Measurements	353
Delay in TR	0 ms
Multiple series	Off

**Resolution - Common**

FoV read	200 mm
FoV phase	100.0 %
Slice thickness	1.25 mm
Base resolution	160
Phase resolution	100 %
Phase partial Fourier	6/8
Interpolation	Off

**Resolution - iPAT**

PAT mode	GRAPPA
Accel. factor PE	3
Ref. lines PE	78
Reference scan mode	GRE

**Resolution - Filter Image**

Distortion Corr.	Off
Prescan Normalize	Off

**Resolution - Filter Rawdata**

Raw filter	Off
Elliptical filter	Off
Hamming	Off

**Geometry - Common**

Slice group	1
Slices	78
Dist. factor	0 %
Position	L1.9 A3.4 F2.6 mm
Orientation	T > C-31.8
Phase enc. dir.	A >> P
FoV read	200 mm
FoV phase	100.0 %
Slice thickness	1.25 mm
TR	2100 ms
Multi-slice mode	Interleaved
Series	Interleaved
Multi-band accel. factor	2

**Geometry - AutoAlign**

Slice group	1
Position	L1.9 A3.4 F2.6 mm
Orientation	T > C-31.8
Phase enc. dir.	A >> P
AutoAlign	---
Initial Position	L1.9 A3.4 F2.6
L	1.9 mm
A	3.4 mm
F	2.6 mm
Initial Rotation	-1.83 deg
Initial Orientation	T > C
T > C	-31.8
> S	0.0

**Geometry - Saturation**

Fat suppr.	Fat sat.
Special sat.	None

**Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table position	H
Table position	0 mm
Inline Composing	Off

**System - Miscellaneous**

Positioning mode	FIX
Table position	H
Table position	0 mm
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H
Coil Combine Mode	Sum of Squares
Matrix Optimization	Off
AutoAlign	---
Coil Select Mode	Default

**System - Adjustments**

B0 Shim mode	Brain
B1 Shim mode	TrueForm
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

**System - Adjust Volume**

Position	L1.9 A3.4 F2.6 mm
Orientation	T > C-31.8
Rotation	-1.83 deg
A >> P	200 mm
R >> L	200 mm
F >> H	98 mm
Reset	Off

**System - pTx Volumes**

B1 Shim mode	TrueForm
Excitation	Standard

**System - Tx/Rx**

Frequency 1H	297.211198 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

**Physio - Signal1**

1st Signal/Mode	None
TR	2100 ms
Multi-band accel. factor	2

**BOLD**

GLM Statistics	Off
Dynamic t-maps	Off
Ignore meas. at start	0
Ignore after transition	0
Model transition states	On
Temp. highpass filter	On
Threshold	4.00
Paradigm size	20
Meas[1]	Baseline
Meas[2]	Baseline
Meas[3]	Baseline
Meas[4]	Baseline
Meas[5]	Baseline
Meas[6]	Baseline
Meas[7]	Baseline
Meas[8]	Baseline
Meas[9]	Baseline
Meas[10]	Baseline
Meas[11]	Active
Meas[12]	Active
Meas[13]	Active
Meas[14]	Active
Meas[15]	Active
Meas[16]	Active
Meas[17]	Active
Meas[18]	Active
Meas[19]	Active
Meas[20]	Active
Motion correction	Off
Spatial filter	Off

**BOLD**

Measurements	353
Delay in TR	0 ms
Multiple series	Off

**Sequence - Part 1**

Introduction	On
Contrasts	1
Flow comp.	No
Multi-slice mode	Interleaved
Free echo spacing	On
Echo spacing	0.78 ms
Bandwidth	1488 Hz/Px

**Sequence - Part 2**

EPI factor	160
Gradient mode	Fast
Excitation	Standard
RF spoiling	Off

**Sequence - Special**

Excite pulse duration	6400 us
Single-band images	On
MB LeakBlock kernel	On
MB dual kernel	Off
MB RF phase scramble	Off
SENSE1 coil combine	Off
Invert RO/PE polarity	On
PF omits higher k-space	Off
Disable freq. update	Off
Force equal slice timing	Off
Online multi-band recon.	Online
FFT scale factor	1.00
Fat saturation FA	110.0 deg
GRE iPAT ref. FA	12.0 deg
Physio recording	Off
Triggering scheme	Standard



\\USER\FIL Physics\Vahid\Darya\_Frank\_protocol\t2\_spc\_tra\_sel\_500um\_7T tweaked

TA: 10:25 PM: REF Voxel size: 0.5×0.5×0.6 mmPAT: 2 Rel. SNR: 1.00 : spc

**Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	Off
Auto store images	On
Load images to stamp segments	On
Load images to graphic segments	On
Auto open inline display	Off
Auto close inline display	Off
Start measurement without further preparation	Off
Wait for user to start	Off
Start measurements	Single measurement

**Routine**

Slab group	1
Slabs	1
Position	L0.0 A13.7 F23.0 mm
Orientation	T > C-31.8
Phase enc. dir.	R >> L
AutoAlign	---
Phase oversampling	0 %
Slice oversampling	14.3 %
Slices per slab	112
FoV read	200 mm
FoV phase	84.4 %
Slice thickness	0.60 mm
TR	3500 ms
TE	231 ms
Averages	1.4
Concatenations	1
Filter	Raw filter, B1 filter
Coil elements	AC

**Contrast - Common**

TR	3500 ms
TE	231 ms
MTC	Off
Magn. preparation	None
Fat suppr.	None
Blood suppr.	Off
Restore magn.	Off

**Contrast - Dynamic**

Averages	1.4
Reconstruction	Magnitude
Measurements	1
Multiple series	Each measurement

**Resolution - Common**

FoV read	200 mm
FoV phase	84.4 %
Slice thickness	0.60 mm
Base resolution	384
Phase resolution	100 %
Slice resolution	100 %
Phase partial Fourier	Allowed
Slice partial Fourier	Off
Interpolation	Off

**Resolution - iPAT**

PAT mode	GRAPPA
Accel. factor PE	2
Ref. lines PE	24
Accel. factor 3D	1
Reference scan mode	Integrated

**Resolution - Filter Image**

Image Filter	Off
Distortion Corr.	Off
Prescan Normalize	Off
Normalize	Off
B1 filter	On
Unfiltered images	Off

**Resolution - Filter Rawdata**

Raw filter	On
Elliptical filter	Off

**Geometry - Common**

Slab group	1
Slabs	1
Position	L0.0 A13.7 F23.0 mm
Orientation	T > C-31.8
Phase enc. dir.	R >> L
Slice oversampling	14.3 %
Slices per slab	112
FoV read	200 mm
FoV phase	84.4 %
Slice thickness	0.60 mm
TR	3500 ms
Series	Interleaved
Concatenations	1

**Geometry - AutoAlign**

Slab group	1
Position	L0.0 A13.7 F23.0 mm
Orientation	T > C-31.8
Phase enc. dir.	R >> L
AutoAlign	---
Initial Position	L0.0 A13.7 F23.0
R	0.0 mm
A	13.7 mm
F	23.0 mm
Initial Rotation	90.00 deg
Initial Orientation	T > C
T > C	-31.8
> S	0.0

**Geometry - Saturation**

Fat suppr.	None
Restore magn.	Off
Special sat.	None

**Geometry - Navigator****Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table position	H
Table position	0 mm
Inline Composing	Off

**System - Miscellaneous**

Positioning mode	REF
Table position	H
Table position	0 mm
MSMA	S - C - T
Sagittal	L >> R
Coronal	P >> A
Transversal	F >> H
Coil Combine Mode	Adaptive Combine
Save uncombined	Off
Matrix Optimization	Off
AutoAlign	---
Coil Select Mode	Off - All

**System - Adjustments**

B0 Shim mode	Brain
B1 Shim mode	TrueForm
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

**System - Adjust Volume**

! Position	L0.0 A13.3 F20.6 mm
! Orientation	T > C-31.8
! Rotation	90.00 deg
! R >> L	169 mm
! A >> P	200 mm
! F >> H	56 mm
Reset	Off

**System - pTx Volumes**

B1 Shim mode	TrueForm
Excitation	Slab-sel.

**System - Tx/Rx**

Frequency 1H	297.211198 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	2.000
Reset	Off
? Ref. amplitude 1H	0.000 V

**Physio - Signal1**

1st Signal/Mode	None
Trigger delay	0 ms
TR	3500 ms
Concatenations	1

**Physio - Cardiac**

Magn. preparation	None
Fat suppr.	None
Dark blood	Off
FoV read	200 mm
FoV phase	84.4 %
Phase resolution	100 %

**Physio - PACE**

Resp. control	Off
Concatenations	1

**Inline - Common**

Subtract	Off
Measurements	1

**Inline - Common**

StdDev	Off
Save original images	On

**Inline - MIP**

MIP-Sag	Off
MIP-Cor	Off
MIP-Tra	Off
MIP-Time	Off
Save original images	On

**Inline - Composing**

Inline Composing	Off
Distortion Corr.	Off

**Sequence - Part 1**

Introduction	On
Dimension	3D
Elliptical scanning	Off
Reordering	Linear
Flow comp.	No
Echo spacing	3.79 ms
Adiabatic-mode	Off
Bandwidth	868 Hz/Px

**Sequence - Part 2**

Echo train duration	546 ms
RF pulse type	Normal
Gradient mode	Fast*
Excitation	Slab-sel.
Flip angle mode	T2 var
Turbo factor	176

**Sequence - Assistant**

Allowed delay	30 s
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\\USER\FIL Physics\Vahid\Darya\_Frank\_protocol\cmrr\_mbep2d\_1p25\_blipRev\_RF4ms

TA: 1:02 PM: REF Voxel size: 1.3×1.3×1.3 mmPAT: 3 Rel. SNR: 1.00 : epfid

**Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	Off
Auto store images	On
Load images to stamp segments	Off
Load images to graphic segments	Off
Auto open inline display	Off
Auto close inline display	Off
Start measurement without further preparation	Off
Wait for user to start	Off
Start measurements	Single measurement

**Routine**

Slice group	1
Slices	78
Dist. factor	0 %
Position	L1.9 A3.4 F2.6 mm
Orientation	T > C-31.8
Phase enc. dir.	A >> P
AutoAlign	---
Phase oversampling	0 %
FoV read	200 mm
FoV phase	100.0 %
Slice thickness	1.25 mm
TR	2100 ms
TE	19.00 ms
Multi-band accel. factor	2
Filter	None
Coil elements	AC

**Contrast - Common**

TR	2100 ms
TE	19.00 ms
MTC	Off
Magn. preparation	None
Flip angle	70 deg
Fat suppr.	Fat sat.

**Contrast - Dynamic**

Averaging mode	Long term
Reconstruction	Magnitude
Measurements	4
Delay in TR	0 ms
Multiple series	Off

**Resolution - Common**

FoV read	200 mm
FoV phase	100.0 %
Slice thickness	1.25 mm
Base resolution	160
Phase resolution	105 %
Phase partial Fourier	6/8
Interpolation	Off

**Resolution - iPAT**

PAT mode	GRAPPA
Accel. factor PE	3
Ref. lines PE	78
Reference scan mode	GRE

**Resolution - Filter Image**

Distortion Corr.	Off
Prescan Normalize	Off

**Resolution - Filter Rawdata**

Raw filter	Off
Elliptical filter	Off
Hamming	Off

**Geometry - Common**

Slice group	1
Slices	78
Dist. factor	0 %
Position	L1.9 A3.4 F2.6 mm
Orientation	T > C-31.8
Phase enc. dir.	A >> P
FoV read	200 mm
FoV phase	100.0 %
Slice thickness	1.25 mm
TR	2100 ms
Multi-slice mode	Interleaved
Series	Interleaved
Multi-band accel. factor	2

**Geometry - AutoAlign**

Slice group	1
Position	L1.9 A3.4 F2.6 mm
Orientation	T > C-31.8
Phase enc. dir.	A >> P
AutoAlign	---
Initial Position	L1.9 A3.4 F2.6
L	1.9 mm
A	3.4 mm
F	2.6 mm
Initial Rotation	-1.83 deg
Initial Orientation	T > C
T > C	-31.8
> S	0.0

**Geometry - Saturation**

Fat suppr.	Fat sat.
Special sat.	None

**Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table position	H
Table position	0 mm
Inline Composing	Off

**System - Miscellaneous**

Positioning mode	REF
Table position	H
Table position	0 mm
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H
Coil Combine Mode	Sum of Squares
Matrix Optimization	Off
AutoAlign	---
Coil Select Mode	Default

**System - Adjustments**

B0 Shim mode	Brain
B1 Shim mode	TrueForm
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

**System - Adjust Volume**

Position	L1.9 A3.4 F2.6 mm
Orientation	T > C-31.8
Rotation	-1.83 deg
A >> P	200 mm
R >> L	200 mm
F >> H	98 mm
Reset	Off

**System - pTx Volumes**

B1 Shim mode	TrueForm
Excitation	Standard

**System - Tx/Rx**

Frequency 1H	297.211198 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

**Physio - Signal1**

1st Signal/Mode	None
TR	2100 ms
Multi-band accel. factor	2

**BOLD**

GLM Statistics	Off
Dynamic t-maps	Off
Ignore meas. at start	0
Ignore after transition	0
Model transition states	On
Temp. highpass filter	On
Threshold	4.00
Paradigm size	20
Meas[1]	Baseline
Meas[2]	Baseline
Meas[3]	Baseline
Meas[4]	Baseline
Meas[5]	Baseline
Meas[6]	Baseline
Meas[7]	Baseline
Meas[8]	Baseline
Meas[9]	Baseline
Meas[10]	Baseline
Meas[11]	Active
Meas[12]	Active
Meas[13]	Active
Meas[14]	Active
Meas[15]	Active
Meas[16]	Active
Meas[17]	Active
Meas[18]	Active
Meas[19]	Active
Meas[20]	Active
Motion correction	Off
Spatial filter	Off

**BOLD**

Measurements	4
Delay in TR	0 ms
Multiple series	Off

**Sequence - Part 1**

Introduction	On
Contrasts	1
Flow comp.	No
Multi-slice mode	Interleaved
Free echo spacing	On
Echo spacing	0.78 ms
Bandwidth	1488 Hz/Px

**Sequence - Part 2**

EPI factor	168
Gradient mode	Fast
Excitation	Standard
RF spoiling	Off

**Sequence - Special**

Excite pulse duration	4000 us
Single-band images	On
MB LeakBlock kernel	On
MB dual kernel	Off
MB RF phase scramble	Off
SENSE1 coil combine	Off
Invert RO/PE polarity	Off
PF omits higher k-space	Off
Disable freq. update	Off
Force equal slice timing	Off
Online multi-band recon.	Online
FFT scale factor	1.00
Fat saturation FA	110.0 deg
GRE iPAT ref. FA	12.0 deg
Physio recording	Off
Triggering scheme	Standard

\\USER\FIL Physics\Vahid\Darya\_Frank\_protocol\cmrr\_mbep2d\_1p25\_run1\_PA\_RF4ms

TA: 13:15 PM: FIX Voxel size: 1.3×1.3×1.3 mmPAT: 3 Rel. SNR: 1.00 : efpid

**Properties**

Prio recon	Off
Load images to viewer	On
Inline movie	Off
Auto store images	On
Load images to stamp segments	Off
Load images to graphic segments	Off
Auto open inline display	Off
Auto close inline display	Off
Start measurement without further preparation	Off
Wait for user to start	Off
Start measurements	Single measurement

**Routine**

Slice group	1
Slices	78
Dist. factor	0 %
Position	L1.9 A3.4 F2.6 mm
Orientation	T > C-31.8
Phase enc. dir.	A >> P
AutoAlign	---
Phase oversampling	0 %
FoV read	200 mm
FoV phase	100.0 %
Slice thickness	1.25 mm
TR	2100 ms
TE	19.00 ms
Multi-band accel. factor	2
Filter	None
Coil elements	AC

**Contrast - Common**

TR	2100 ms
TE	19.00 ms
MTC	Off
Magn. preparation	None
Flip angle	70 deg
Fat suppr.	Fat sat.

**Contrast - Dynamic**

Averaging mode	Long term
Reconstruction	Magnitude
Measurements	353
Delay in TR	0 ms
Multiple series	Off

**Resolution - Common**

FoV read	200 mm
FoV phase	100.0 %
Slice thickness	1.25 mm
Base resolution	160
Phase resolution	105 %
Phase partial Fourier	6/8
Interpolation	Off

**Resolution - iPAT**

PAT mode	GRAPPA
Accel. factor PE	3
Ref. lines PE	78
Reference scan mode	GRE

**Resolution - Filter Image**

Distortion Corr.	Off
Prescan Normalize	Off

**Resolution - Filter Rawdata**

Raw filter	Off
Elliptical filter	Off
Hamming	Off

**Geometry - Common**

Slice group	1
Slices	78
Dist. factor	0 %
Position	L1.9 A3.4 F2.6 mm
Orientation	T > C-31.8
Phase enc. dir.	A >> P
FoV read	200 mm
FoV phase	100.0 %
Slice thickness	1.25 mm
TR	2100 ms
Multi-slice mode	Interleaved
Series	Interleaved
Multi-band accel. factor	2

**Geometry - AutoAlign**

Slice group	1
Position	L1.9 A3.4 F2.6 mm
Orientation	T > C-31.8
Phase enc. dir.	A >> P
AutoAlign	---
Initial Position	L1.9 A3.4 F2.6
L	1.9 mm
A	3.4 mm
F	2.6 mm
Initial Rotation	-1.83 deg
Initial Orientation	T > C
T > C	-31.8
> S	0.0

**Geometry - Saturation**

Fat suppr.	Fat sat.
Special sat.	None

**Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table position	H
Table position	0 mm
Inline Composing	Off

**System - Miscellaneous**

Positioning mode	FIX
Table position	H
Table position	0 mm
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H
Coil Combine Mode	Sum of Squares
Matrix Optimization	Off
AutoAlign	---
Coil Select Mode	Default

**System - Adjustments**

B0 Shim mode	Brain
B1 Shim mode	TrueForm
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto

**System - Adjust Volume**

Position	L1.9 A3.4 F2.6 mm
Orientation	T > C-31.8
Rotation	-1.83 deg
A >> P	200 mm
R >> L	200 mm
F >> H	98 mm
Reset	Off

**System - pTx Volumes**

B1 Shim mode	TrueForm
Excitation	Standard

**System - Tx/Rx**

Frequency 1H	297.211198 MHz
Correction factor	1
Gain	High
Img. Scale Cor.	1.000
Reset	Off
? Ref. amplitude 1H	0.000 V

**Physio - Signal1**

1st Signal/Mode	None
TR	2100 ms
Multi-band accel. factor	2

**BOLD**

GLM Statistics	Off
Dynamic t-maps	Off
Ignore meas. at start	0
Ignore after transition	0
Model transition states	On
Temp. highpass filter	On
Threshold	4.00
Paradigm size	20
Meas[1]	Baseline
Meas[2]	Baseline
Meas[3]	Baseline
Meas[4]	Baseline
Meas[5]	Baseline
Meas[6]	Baseline
Meas[7]	Baseline
Meas[8]	Baseline
Meas[9]	Baseline
Meas[10]	Baseline
Meas[11]	Active
Meas[12]	Active
Meas[13]	Active
Meas[14]	Active
Meas[15]	Active
Meas[16]	Active
Meas[17]	Active
Meas[18]	Active
Meas[19]	Active
Meas[20]	Active
Motion correction	Off
Spatial filter	Off

**BOLD**

Measurements	353
Delay in TR	0 ms
Multiple series	Off

**Sequence - Part 1**

Introduction	On
Contrasts	1
Flow comp.	No
Multi-slice mode	Interleaved
Free echo spacing	On
Echo spacing	0.78 ms
Bandwidth	1488 Hz/Px

**Sequence - Part 2**

EPI factor	168
Gradient mode	Fast
Excitation	Standard
RF spoiling	Off

**Sequence - Special**

Excite pulse duration	4000 us
Single-band images	On
MB LeakBlock kernel	On
MB dual kernel	Off
MB RF phase scramble	Off
SENSE1 coil combine	Off
Invert RO/PE polarity	On
PF omits higher k-space	Off
Disable freq. update	Off
Force equal slice timing	Off
Online multi-band recon.	Online
FFT scale factor	1.00
Fat saturation FA	110.0 deg
GRE iPAT ref. FA	12.0 deg
Physio recording	Off
Triggering scheme	Standard