Manual of k-t FOCUSS with ME/MC

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This program is with respect to the ***k-t FOCUSS with ME/MC***.

We divided it into two categories of Cartesian and radial formats, respectively.

Each format includes three main functions of measurement generation with down-sampling rate, ***k-t FOCUSS*** and ***k-t FOCUSS with ME/MC***.

Execution files are placed in folder '***bin***', and example data is placed in folder '***data***'.

Here are more details.

A. Cartesian format (you can just execute Exe1=> Exe3)

1. *'Exe1_Measurement_Gen.m'*
    1) Open the file
    2) Define down-sampling rate: ***DsRate***
    3) Select reference image type for ME/MC calculation
        a. A fully sampled frame: '***FullSingleFrame***'
        b. Temporal average of diastole frames: '***DiastoleFrames***'
    4) Define the number of central phase encoding lines: '***num_low_phase***'
    5) In case 'a', choose one frame as a reference image
    6) In case 'b', define diastole frames manually to generate a reference image
    7) Execute the file
2. *'Exe2_ktFOCUSS.m'*
    1) Open the file
    2) Define functions: ***A, AT***

3) Define parameters for *k-t FOCUSS*

4) Execute the file

3. 'Exe3_ktFOCUSSwithMEMC.m'

1) Open the file

2) Define functions: ***A, AT***

3) Define parameters for *k-t FOCUSS*

4) Define parameters for ME/MC: ***px, py, ws***

5) Execute the file

B. Radial format (you can just execute Exe1=> Exe3)

Our radial data has three dimensions: (r, ϕ, t).

We first calculate the re-binning from radial to the Cartesian domain, which is equivalent to the 2D-fourier transform domain.

Since the re-binning process is calculated in the shifted domain, low frequency of the original data should be centered (see functions: '*fftshift', 'ifftshift'*).

When you define functions of '*A*' and '*AT*', shift operators should be included properly (see our example code).

1. 'Exe1_Measurement_Gen.m'

1) Open the file

2) Define down-sampling rate: ***DsRate***

3) Select reference image type for ME/MC calculation

a. A fully sampled frame: '***FullSingleFrame***'

b. Temporal average of diastole frames: '***DiastoleFrames***'

4) In case 'a', choose one frame as a reference image

5) In case 'b', define diastole frames manually to generate a reference image

6) Execute the file

2. 'Exe2_ktFOCUSS.m'

1) Open the file

2) Define functions: ***A, AT***

3) Define parameters for *k-t FOCUSS*

4) Execute the file

3. 'Exe3_ktFOCUSSwithMEMC.m'

1) Open the file

2) Define functions: ***A, AT***

3) Define parameters for *k-t FOCUSS*

4) Define parameters for ME/MC: ***px, py, ws***

5) Execute the file