MRVelocityMapping V1.3.1 Manual

1. Open Tools

Double Click **'MRVelocityMappingV1.3.1.exe'**. When you fail to open the tools panel like as **Fig.1** then install MS Visual C++ Runtime libs first. Run 'vcredist_x86.exe' or 'vcredist_x64.exe' which can be downloaded from Microsoft official websites.
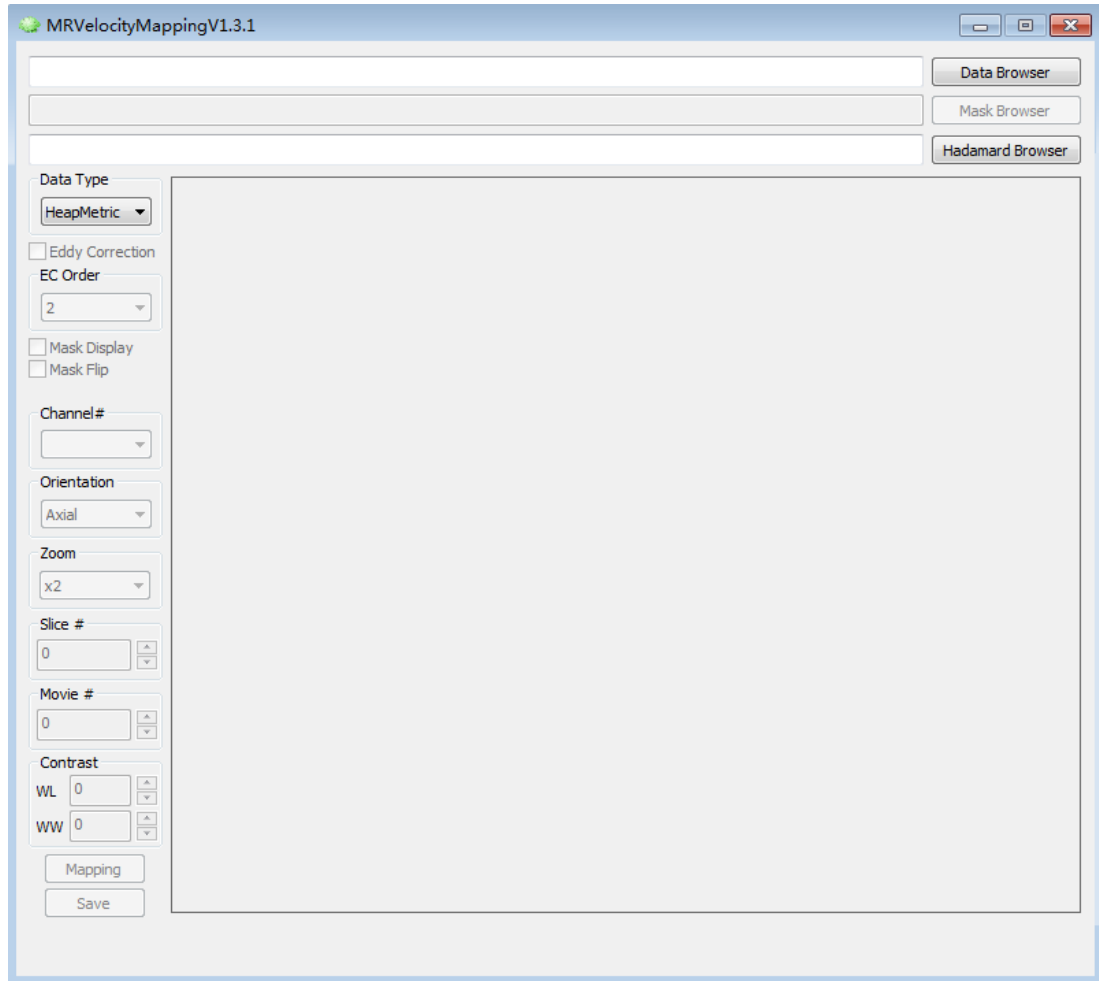

Figure 1

2. HEAP-METRIC Velocity Mapping

2.1 Reconstruction without mask file.

2.1.1 Select the **'Data Type'** box to be **'HeapMetric'**.

2.1.2 Click **'Data Browser'** button. Then select a data folder which is acquired by using **'pcHeapMetric'** sequence on **Bruker ParaVision 6.0.1** system.

2.1.3 Click **'Hadamard Browser'** button. Then select a Hadamard Matrix file **'*.sqmat'**.

2.1.4 Click **'Mapping'** Button. Then results will be reconstructed on 5 channels: magnitude, phase raw (no unwrapped), unwrapped phase, velocity map (with

sign), absolute velocity map (no sign). Select **'Channel#'** box to display different channel results shown as Fig.2.

2.1.5 Click **'Save'** button to save results. Only the results on current selected channel would be saved. If you hope to save all channel results then you have to change the **'Channel#'** and click save button repeatedly. All results are saved as **'Analyze 7.5'** format (*.hdr +*.img).
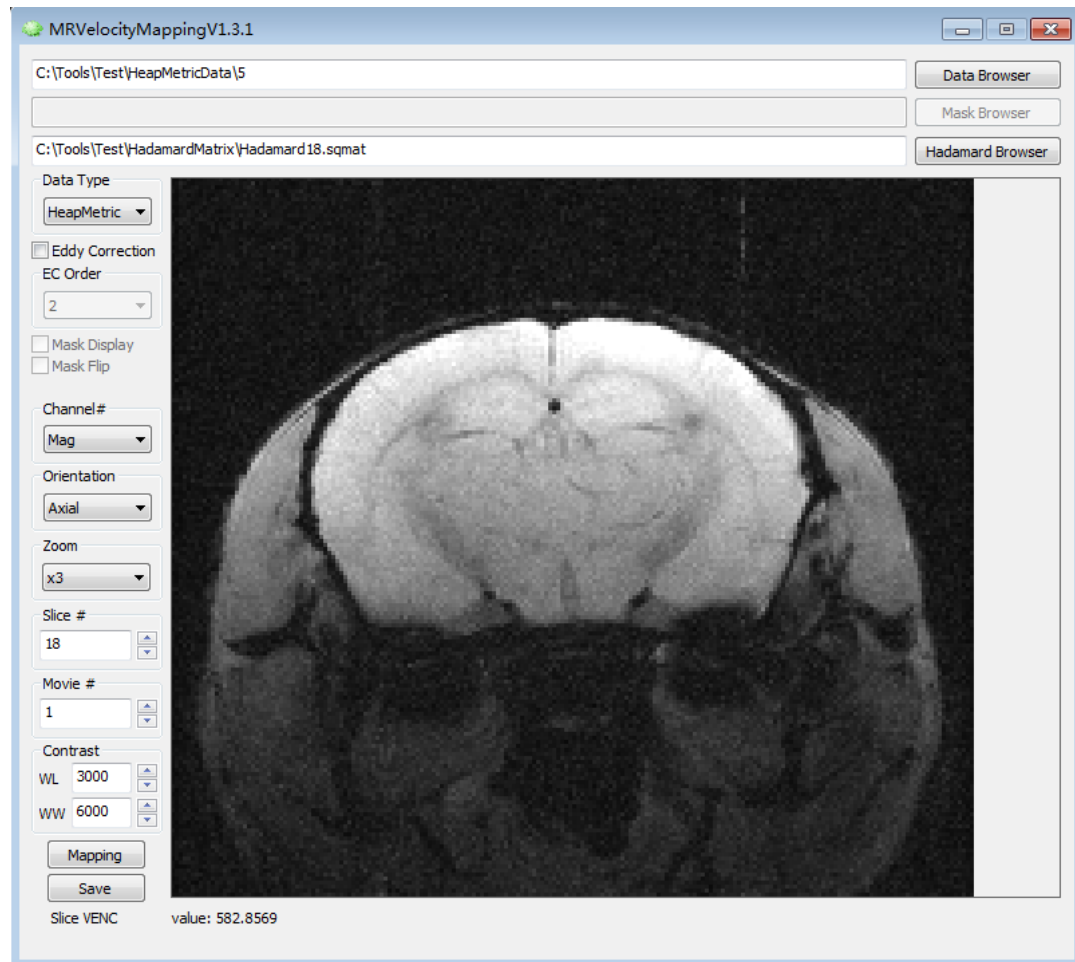

Figure 2

2.2 Reconstruction with mask (With eddy current filed correction).

2.2.1 Use images reconstructed from **Step 2.1** to manually trace a mask on global static tissues. Then saved your mask as **'Analyze 7.5'** format (*.hdr +*.img).

2.2.2 Repeat **Steps 2.1.1 – 2.1.3**

2.2.3 Click **'Eddy Correction'**, then click **'Mask Browser'** button. Chose the mask file saved from **Step 2.2.1**.

2.2.4 Repeat **Step 2.1.4**. (Optional operations: now you can change **'EC Order'** to change eddy field fitting harmonics; you can click **'Mask Display'** button to show mask to confirm the match like as **Fig.3**; you can click **'Mask Flip'** to flip images for sometimes mask saved are reversed on phase encoding orientation). You can

Click **'Mapping'** button over and over.

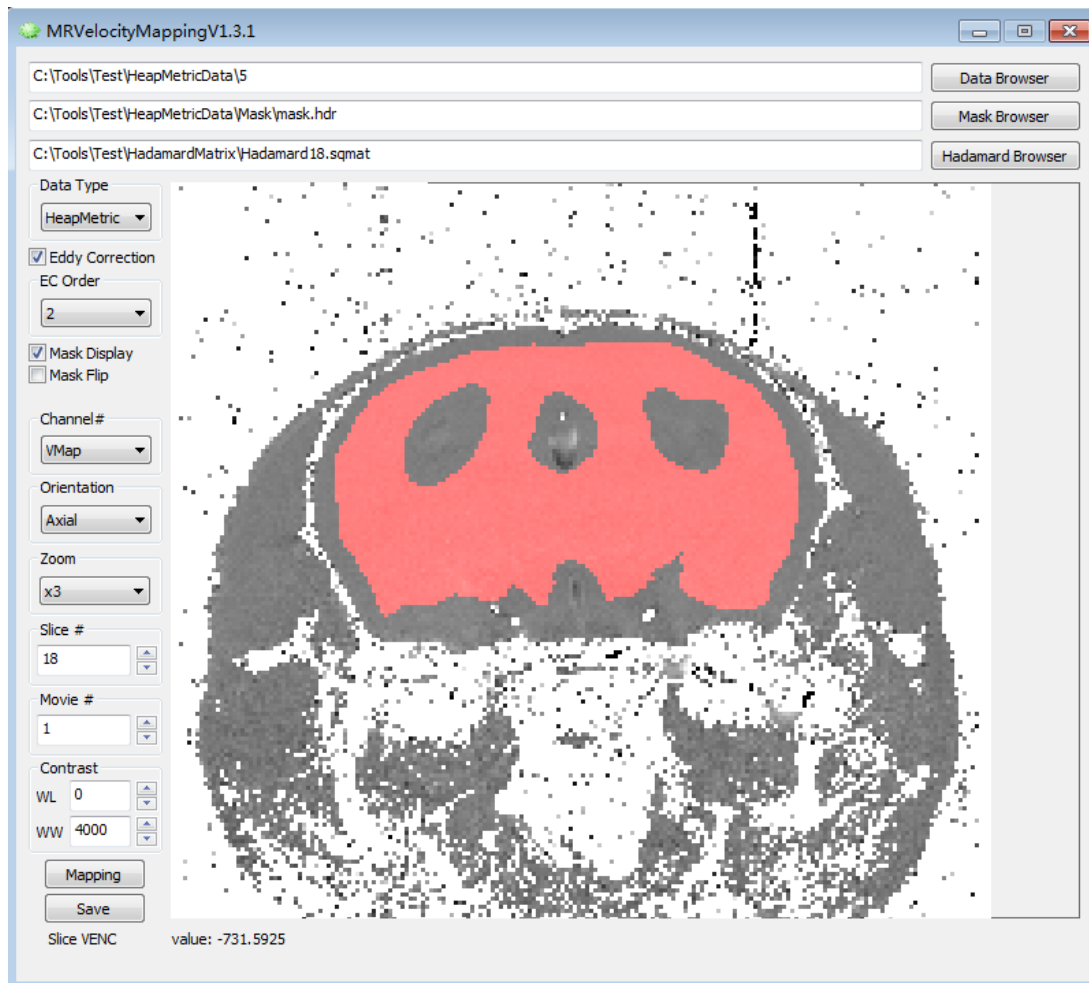2.2.5 Save Results. See in **Step 2.1.5**.

Figure 3

3. Trigger Cine Velocity Mapping

3.1 Reconstruction without mask file.

3.1.1 Select the **'Data Type'** box to be **'TriggerCine'**.

3.1.2 Click **'Data Browser'** button. Then select a data folder which is acquired by using **'FLOWMAP'** sequence with **ECG trigger** on **Bruker ParaVision 6.0.1**.

3.1.3 Click **'Mapping'** button. See in **Step 2.1.4**

3.1.4 Save Results. See in **Step 2.1.5**. Results would be save as 4D format. The 4th dimension is the trigger delay time ordered.

3.2 Reconstruction with a mask file (With eddy current filed correction).

3.2.1 Use images reconstructed from **Step 3.1** which is similar to **Step 2.2.1**.

3.2.2 Repeat **Steps 3.1.1 and 3.1.2**

3.2.3 Click **'Eddy Correction'**, then click **'Mask Browser'** button. Chose the mask

file saved from **Step 3.2.1**. For single slice data **'EC order'** is better to be 1 or 0 (Show in Fig.4).

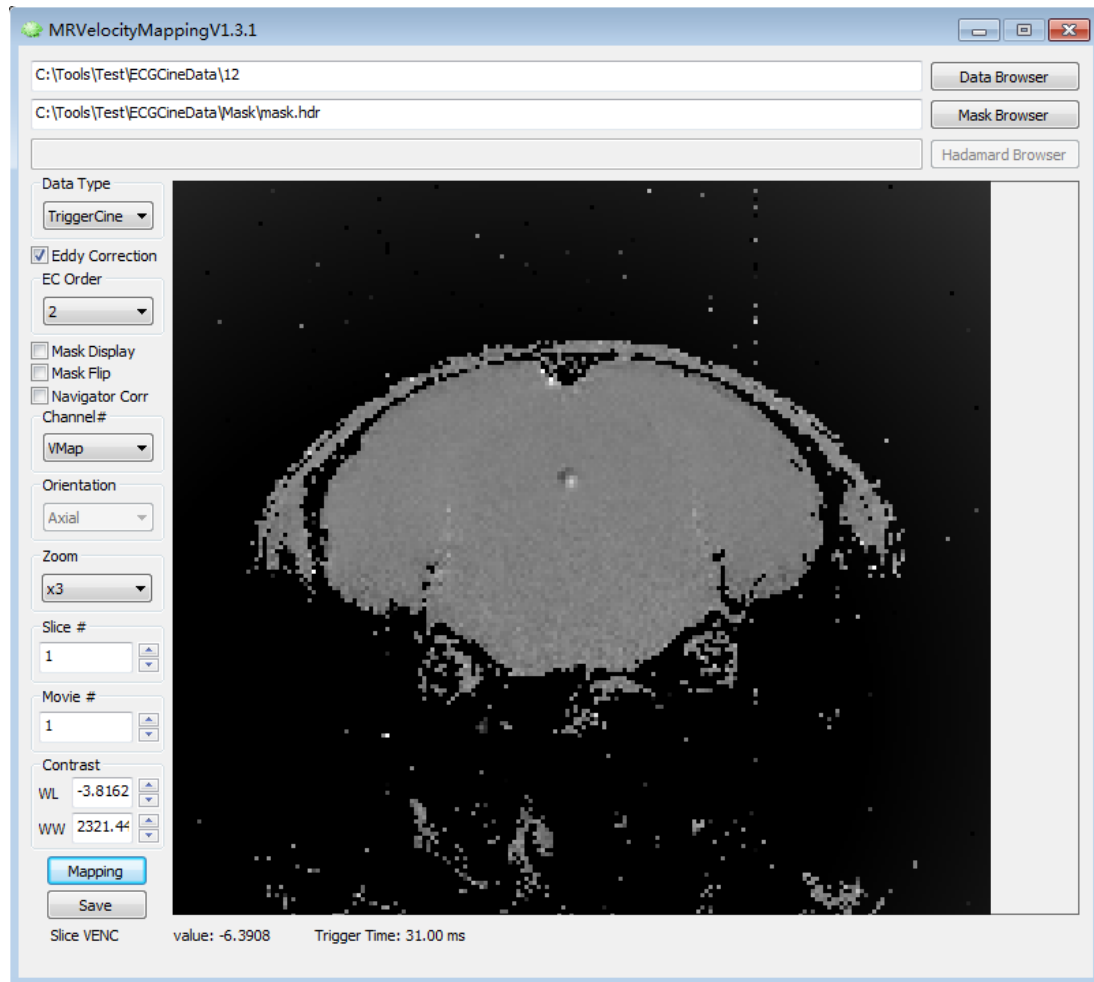3.2.4 Repeat **Steps 3.1.3 and 3.1.4.**

Figure 4

4. Directional Velocity Encoding Results Combination.

4.1 Repeat **Step 2.2** or **Step 3.2** to obtain three directional velocity maps (Read, Phase and Slice). Put the three results in a folder together. (See in Fig.5).
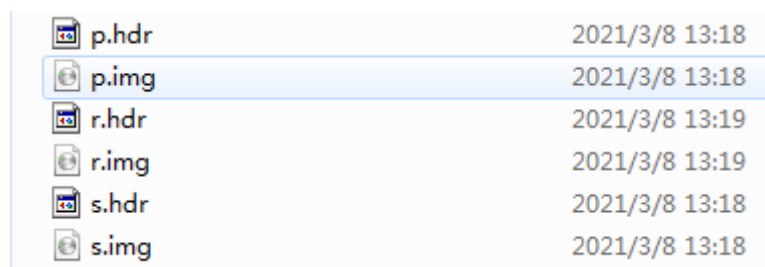

p.hdr	2021/3/8 13:18
p.img	2021/3/8 13:18
r.hdr	2021/3/8 13:19
r.img	2021/3/8 13:19
s.hdr	2021/3/8 13:18
s.img	2021/3/8 13:18

Figure 5

4.2 Select the **'Data Type'** box to be **'3D Combo'**.

4.3 Click **'Data Browser'** button. Then select a data folder containing three

directional velocity maps that is from **Step 4.1**.

4.4 Click **'Mapping'** button. Then results will be reconstructed on 5 channels: Velocity Maps-Read, Velocity Maps-Phase, Velocity Maps-Slice, Velocity Maps-Magnitude (SOS combination), Velocity Maps-RGB (vector display). Show in **Fig.6**.

4.5 Click **'Save'** button to save results which is similar to **Step 2.1.5**. What is the different is when the current **'Channel #'** is **'VMap-RGB'** then data will be saved as *.bmp files.
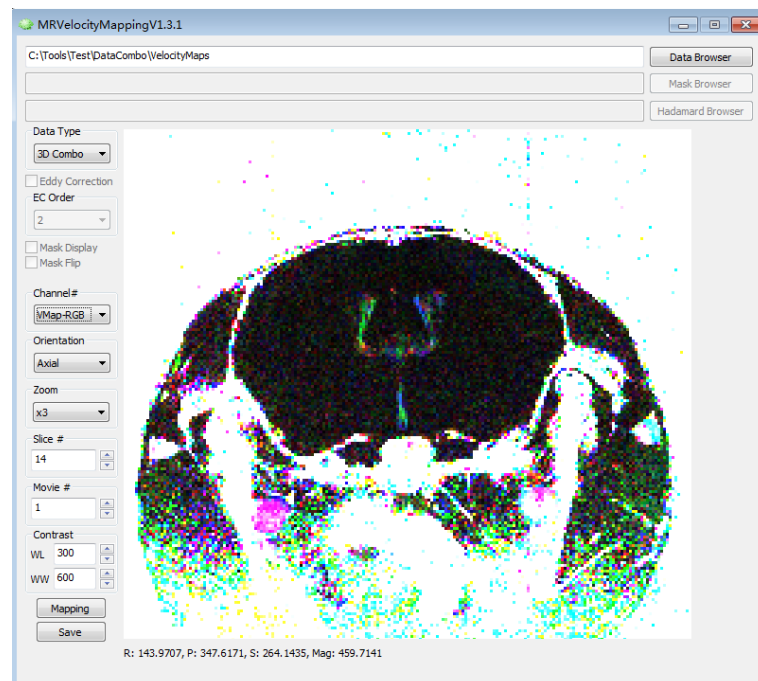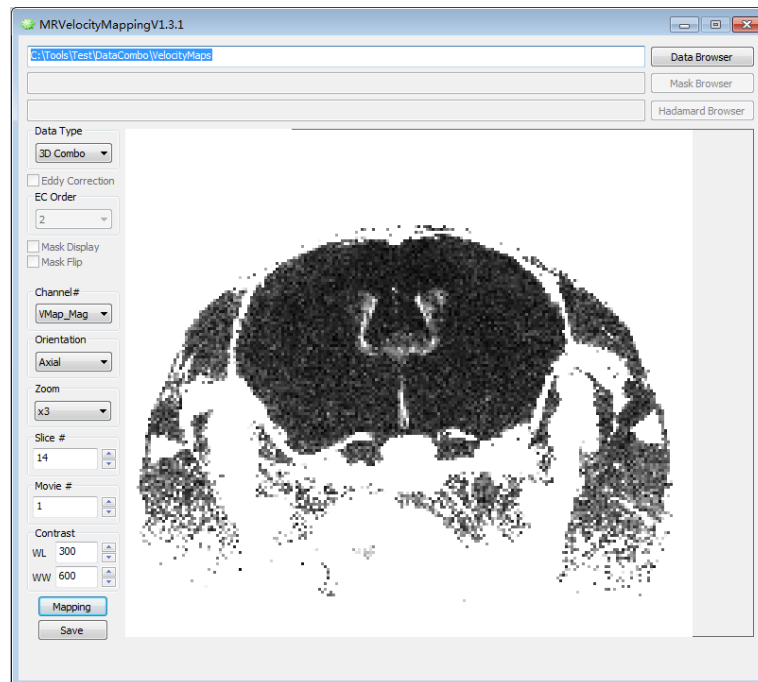

Figure 6