

Harmonic Phase Magnetic Resonance Imaging (HARP- MRI).

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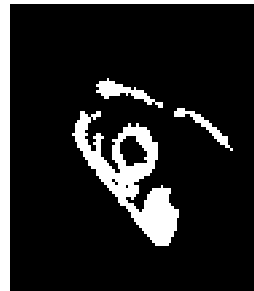
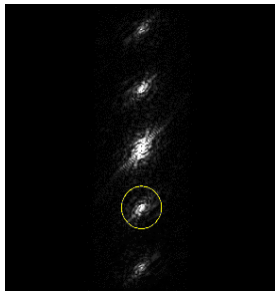
Reference:

[Http://iacl.ece.jhu.edu/projects/HARP/](http://iacl.ece.jhu.edu/projects/HARP/)

Harmonic Phase Magnetic Resonance Imaging is a super computer software. It shows a faster, clear images which will give a doctor immediately information where the heart have damage occurred. Even though an MRI, coupled with cutting-edge “tagging” technology. This features are usually go with underneath of the tissue during heart contraction. However, the tagging technology was provided a highly detailed heart data, but it take several hours for the picture to get process. So that Johns Hopkins Engineering was developed HARP-MRI system to eliminate the delay for a doctor. Moreover, the doctoc can see the condition of heart muscles in a minute not an hours. As we all knew “MRI” technology, which provide high qualify image in the inside of human body base on the medical setting techniques. So does HARP-MRI which’s include all the others existing method, and then give out a new method that will bring the Tagging/MRI closer to clinical application. The HARP-MRI is a technique which will make the cardiac stress test more accurate, and faster. It process only 20 minute to take cardiac stress test that will let the doctor use screen to see heart problem. However, the HARP – MRI can be eliminate the cardiac stress test ,too. HARP-MRI is internal working of heart muscle to remark

the trouble spot that might otherwise go unnoticed. Usually a normal heart muscle contracts in a certain direction and magnitude. So does Prince and Osman was found a short cut for detecting abnormalities inside the heart muscle, and it won’t be long for the techniques. HARP-MRI produces a 2-dimentional view of the left ventrical, which pumps blood into the body and is the side of most coronary artery disease. In the image, the doctor can see clearly if the part of the heart muscle not flexing normally. When coupled with the cardiac stress test, HARP-MRI can let a doctor know quickly whenther to prescribe a modified diet and exercise regimen or call for surgery.

HARP- MRI is a new techniques that could make routine cardiac stress test more accurate and difined. Also it processed fast and sharp heart picture which can already be made using echoplasner magnetic resonance imaging. But the pictures can’t depict the interior working of the heart muscle itself without additional images, which take for awhile, and with the cost, so that the doctor refer to ultrasound ,or MRI instead However, HARP- MRI has been used successful to estimated the motion of heart muscle from tagged MR images, and it faster by ussing scanner, and for the measurement of the complete 2-D motion.



A MRI cross section image in canine heart with horizontal tags line.

Shows the spectrum of the tagged image in first picture.

Shows the magnitude image of the harmonic image corresponding to the filtered peak in second picture.

The harmonic magnitude can be used for segmentation.

Shows the phase of the same image in picture 1.