

Abstract Submitted
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Particle tracking velocimetry using echocardiographic data resolves flow in the left ventricle KAUSHIK SAMPATH, THURA T. ABD, RICHARD T. GEORGE, JOSEPH KATZ, Johns Hopkins Univ — Two dimensional contrast echocardiography was performed on patients with a history of left ventricular (LV) thrombus. The 636 x 434 pixels electrocardiograms were recorded using a GE Vivid 9E system with (M5S-D and 4V-D) probes in a 2-D mode at a magnification of 0.3 mm/pix. The concentration of 2-4.5 micron seed bubbles was adjusted to obtain individually discernable traces, and a data acquisition rate of 60-90 fps kept the inter-frame displacements suitable for matching traces, and calculating vectors, but yet low enough to allow a scanning depth and width of upto 13 cm and 60 degrees respectively. Particle tracking velocimetry (PTV) guided by initial particle image velocimetry (PIV) was used to obtain the velocity distributions inside the LV with vector spacing of 3-5 mm. The data quality was greatly enhanced by implementing an iterative particle specific enhancement and tracking algorithm. Data covering 20 heart beats facilitated phase averaging. The results elucidated blood flow in the intra-ventricular septal region, lateral wall region, the apex of the LV and the mitral valve region.

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