

Abstract Submitted  
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**A novel high temporal resolution phase contrast MRI technique for measuring mitral valve flows** ABRAM VOORHEES, New York Univ, School of Med, Center for Biomedical Imaging, KATJA BOHMANN, New York Univ, School of Medicine, Dept of Cardiothoracic Surgery, KELLY ANNE MCGORTY, New York Univ, School of Med, Center for Biomedical Imaging, TIMOTHY WEI, Rutgers Univ, Dept of Mechanical and Aerospace Engineering, QUN CHEN, VINAY PAI, New York Univ, School of Med, Center for Biomedical Imaging — Mitral valve flow imaging is inherently difficult due to valve plane motion and high blood flow velocities, which can range from 200 cm/s to 700 cm/s under regurgitant conditions. As such, insufficient temporal resolution has hampered imaging of mitral valve flows using magnetic resonance imaging (MRI). A novel phase contrast MRI technique, phase contrast using phase train imaging (PCPTI), has been developed to address the high temporal resolution needs for imaging mitral valve flows. The PCPTI sequence provides the highest temporal resolution to-date (6 ms) for measuring in-plane and through-plane flow patterns, with each velocity component acquired in a separate breathhold. Tested on healthy human volunteers, comparison to a conventional retrogated PC-FLASH cine sequence showed reasonable agreement. Results from a more rigorous validation using digital particle image velocimetry technique will be presented. The technique will be demonstrated *in vitro* using a physiological flow phantom and a St. Jude Medical Masters Series prosthetic valve.

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