Supplementary Media

accompanying the dissertation

HIGH FRAME RATE ULTRASOUND VELOCIMETRY
OF FAST BLOOD FLOW DYNAMICS

by

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Chapter 5 Media: Optical PIV (oPIV) and echoPIV (ePIV) playing side-by-side. Note that both oPIV and ePIV are overlaid on the filtered ultrasound Bmode images.

Chapter 6 Media: Visualization of flow in the left ventricle of a patient with heart failure. High frame rate echoPIV captures the high velocity diastolic flow patterns.

Chapter 8 Media 1: Time-sequence of the phase-averaged flow structures downstream of the different mitral valve configurations. Two iso-velocity surfaces are shown for each valve (at 0.35 m/s and 0.75 m/s in case of the biological valve and at 0.15 m/s and 0.35 m/s for the two mechanical valves)

Chapter 8 Media 2: 3D vortical structures recognized by lambda-2 method are visualized as iso-surface (λ_2= -0.015) and colour-coded with the axial velocity component. The 2D velocity vector field maps are coloured based on vorticity magnitude.

Chapter 9 Media: Orthogonal slice views of echoPIV and TomoPIV results. EchoPIV estimates similar flow patterns to TomoPIV but underestimates velocities in the far field (>70 mm).