

Abstract Submitted  
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**A Feasibility Study of Extracting Absolute Flow Rates Using Laser Speckle Contrast Imaging**<sup>1</sup> ANTHONY YOUNG, KARTHIK VISHWANATH, Miami University — Laser speckle contrast imaging (LSCI) is a technique that is capable of sensing superficial blood flow in human tissues. This can be used to study effects that diseases such as diabetes and systemic sclerosis have on microvascular blood flow. LSCI quantifies flow rate in arbitrary units by analyzing the fluctuations in the scattered speckle pattern captured from a coherent source incident on a moving medium. In this study the relationship between the LSCI flow units and volumetric flow were investigated. A peristaltic pump was used to flow a solution of water and polystyrene spheres through a flow channel at different flow-rates. LSCI was used to image the flow channel and processed to derive measured flow which were then compared to the absolute flow rates. These LSCI measurements were repeated for varying exposure time. We found that the relationship between the flow rates estimated from LSCI and the absolute flow rate was not linear over the range of flow rates used. As the absolute flow rates increased, the LSCI measurements appeared to be saturated and could not distinguish between different flow rates.

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