

Abstract Submitted  
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**Analysis of flow characteristics in cerebral vasculature using stereo densitometry** GUSTAF MÅRTENSSON, Department of Mechanics, Royal Institute of Technology, MICHAEL SÖDERMAN, TOMMY ANDERSSON, Department of Neuroradiology, Karolinska University Hospital, Sweden, DRAZENKO BABIĆ, Philips Medical Systems, The Netherlands, ARNE JOHANSSON, Department of Mechanics, Royal Institute of Technology, Sweden — In an attempt to increase the amount of information available for the clinical evaluation of cerebral malformations, an attempt has been made to accurately predict hemodynamic flow quantities from stereo densitometric data. A high-speed x-ray registration of the injection of contrast agent in a chosen vessel is mapped on to a three-dimensional reconstruction of the vasculature that has been obtained from a rotational run of the x-ray suite. Bulk flow properties of the flow may thus be calculated by registering the arrival of contrast agent fronts to consecutive positions along the axis of the vessel. The methodology was tested for both idealised laminar cases in straight pipes, as well as with considerably more challenging in vivo cases of aneurysms. A preliminary analysis of the experimental validation runs have shown that bulk flow properties were in quantitative agreement with those measured using the techniques outline above. The evaluation of the in vivo cases, which lack other in vivo measurements for comparison, yielded plausible flow characteristics.

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