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**Large depth-of-field PIV in a in a narrow channel** DANA EHYAEI, KENNETH KIGER, University of Maryland — The current work is motivated by a goal to obtain quantitative temporally-resolved velocity measurements of buoyant natural convection within a Hele-Shaw cell. In contrast with typical micro-PIV studies, PIV in a Hele-Shaw cell requires a large field-of-view in comparison to the channel gap spacing, precluding the use of a thin light sheet or a small depth-of-field that can isolate a narrow region of the local Poiseuille velocity profile across the gap. This necessitates imaging particles across the whole depth, causing the cross-correlation to become broadened by the velocity gradients across the gap. In addition to the velocity gradients, the finite Reynolds numbers associated with typical flow conditions may cause significant inertial migration of the seed particles, creating an evolving and non-uniform concentration distribution, which in turn will change the shape and relative peak location of the cross-correlation. In order to make a quantitative relationship to local mean flow within the gap, a uniform flow is studied experimentally and modeled using synthetic image generation at various positions along the flow. This information will then be used to optimize the conditions for reliable PIV interrogation, and sample results of buoyant convection will be given.

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