



Fig. 9. a) Experimental HIP setup. Camera is placed slightly off-axis to avoid the unmodulated beam of the SLM. b) HIP Case A, average of reconstructions of four phase CGHs. Experimental version of Fig. 7(f). c) HIP Case B, average of reconstructions of two phase CGHs. Experimental version of Fig. 8(e). The lower quality in comparison to simulation results is due to SLM pixel cross-talk and flicker effects. d) HIP Case A obtained with IFTA algorithm, which makes the speckle reduction ability of our algorithm quite evident.

progressive video requires 2 and 4 reconstructions per color channel to be averaged respectively for case B and A, implying SLM frame rates of 120 and 240 Hz per color. Such high frame rates are not possible with the current LCoS phase-SLM technology, but may be attained with newly emerging blue-phase materials [37]. Standard cinema quality low-persistence video operating at 24 fps though requires SLM frame rates of 48 or 96 Hz for each color, which is more likely to be attained.

Despite its high frame rate requirements, Case A is advantageous in that it operates with maximum light efficiency. For this case, under the assumption that the light source already generates polarized light, our simulations indicate a light efficiency of approximately 60%, where light is lost only to the unmodulated beam of the SLM and higher diffraction orders. In case B though, a significant part of the energy appears as encoding noise, decreasing the light efficiency to about 6%. However, we remind that such low efficiency values are also the case in alternative algorithms, so our algorithm does not impose a disadvantage here.

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