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Depth of focus in digital holography using spatial partially coherent light[1] KRISTEN BINZ, Wake Forest University, XIAO YU, DAVID CLARK, MYUNG K. KIM, University of South Florida — Digital holography is a powerful, but young, imaging technology that has a vast array of applications; its strength lies in the ability to numerically focus on any plane within a sample from a single hologram and to use both amplitude and phase information from the intensity field to reconstruct the sample's 3D characteristics on a computer. The quality of many holograms, however, is compromised by speckle and other interference noise associated with the high-coherence lasers often used to illuminate the sample. Speckle noise may be diminished by lowering the coherence length of the source. In our experiments, partially coherent light was created by directing a laser beam through a rotating ground glass. We aimed to discern whether the coherence of the source could be systematically altered by changing the position of the ground glass within the focused laser beam. We anticipated that altering the coherence length would also systematically change the depth of focus. Initial results support our hypotheses.

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Kristen Binz
binzkl8@wfu.edu
Wake Forest University

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