

Abstract Submitted
for the DAMOP08 Meeting of
The American Physical Society

Schlieren Imaging with a Dynamic Phase Mask KELLY KLUTTZ,
JAN CHALOUPKA, College of William and Mary — Optical phenomena that manifest themselves as variations in the phase of the incident light, but not the amplitude, are normally invisible to the eye. A traditional Schlieren imaging system uses a knife edge at its focal plane to generate high-contrast images of these “phase objects.” In our numerical simulations, a phase mask replaces the knife edge; we show that the output images are greatly improved, both in intensity and contrast. We also show that different phase masks result in images of varying quality, some of which reproduce the source phase information more faithfully than others. Through the use of a dynamic phase mask, such as with a liquid crystal spatial light modulator (SLM), the output image could be optimized by modifying the phase mask written to the SLM in real time.

Kelly Kluttz
College of William and Mary

Date submitted: 04 Apr 2008

Electronic form version 1.4