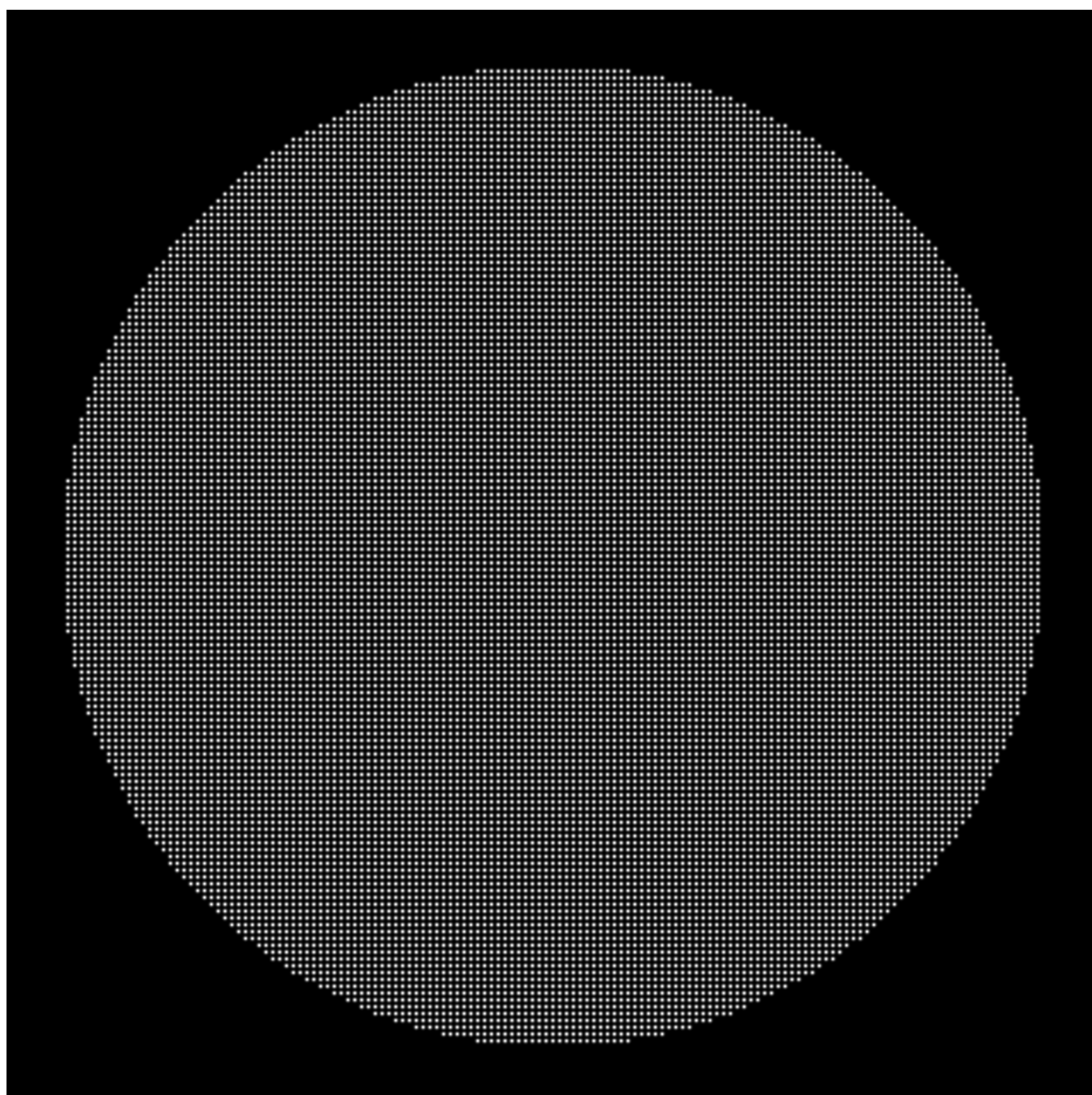


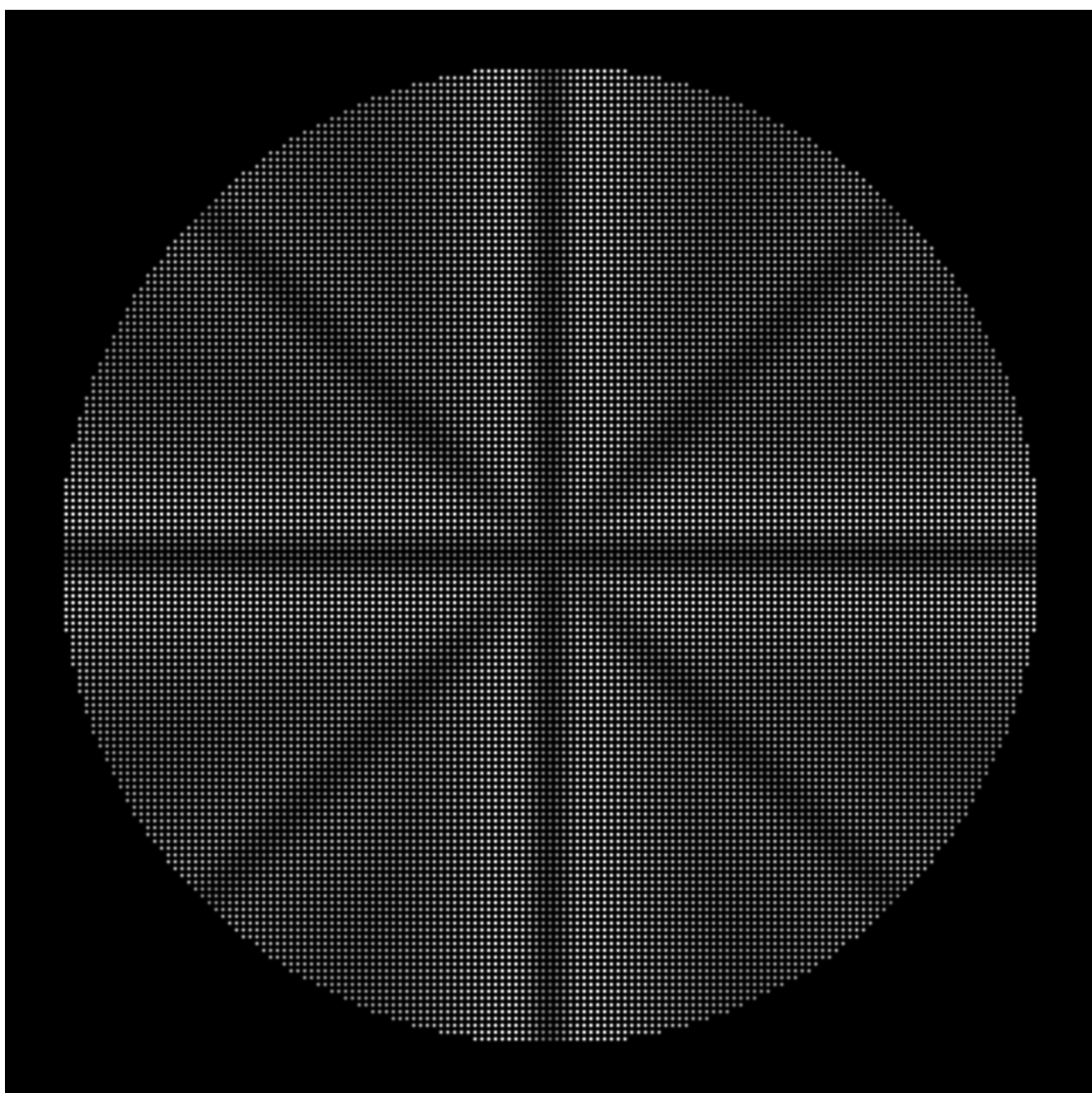
# Visual nonlinearities and the perception of shimmer in repetitive patterns

Jeffrey B. Mulligan

## The effect

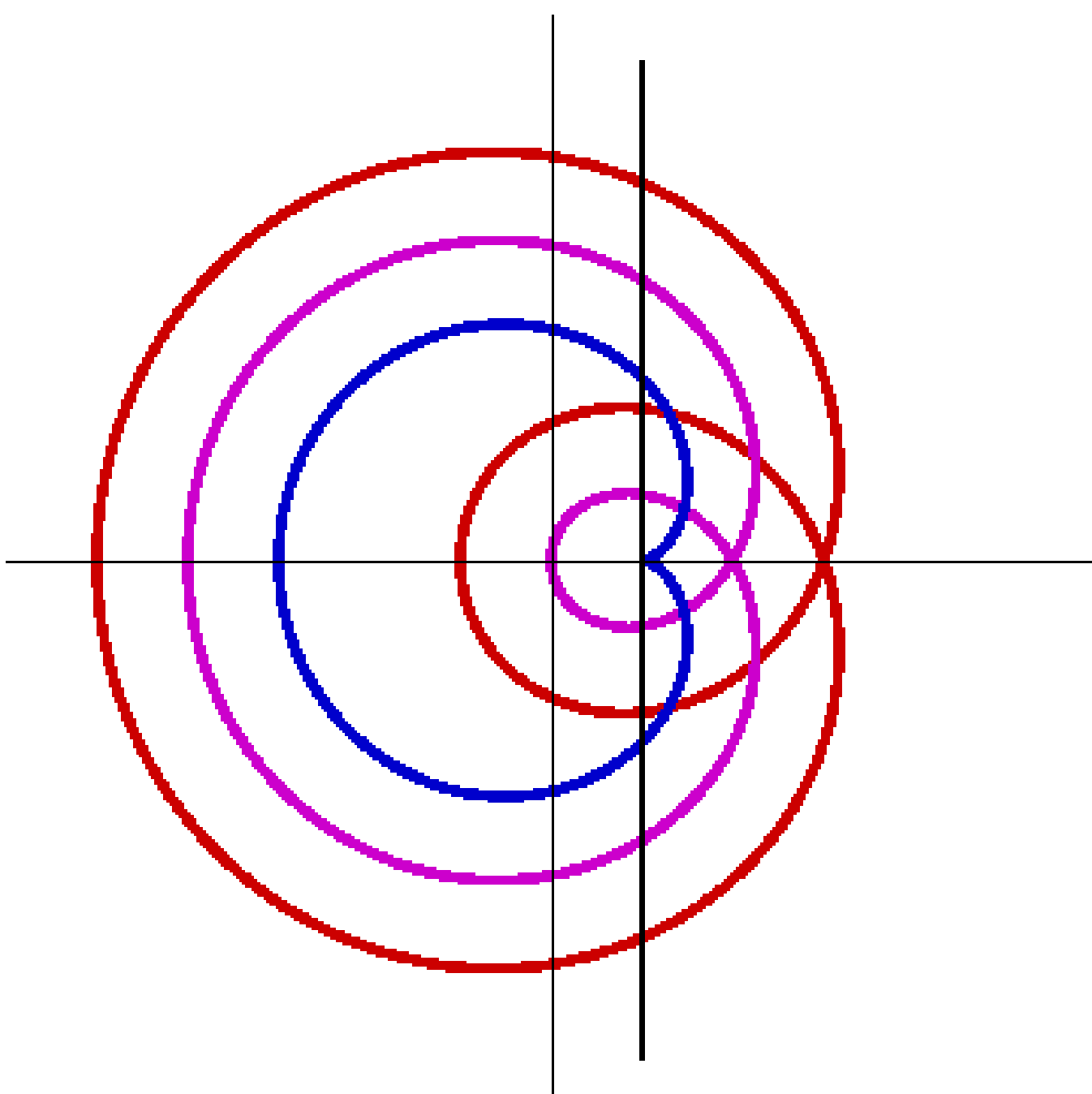


stimulus

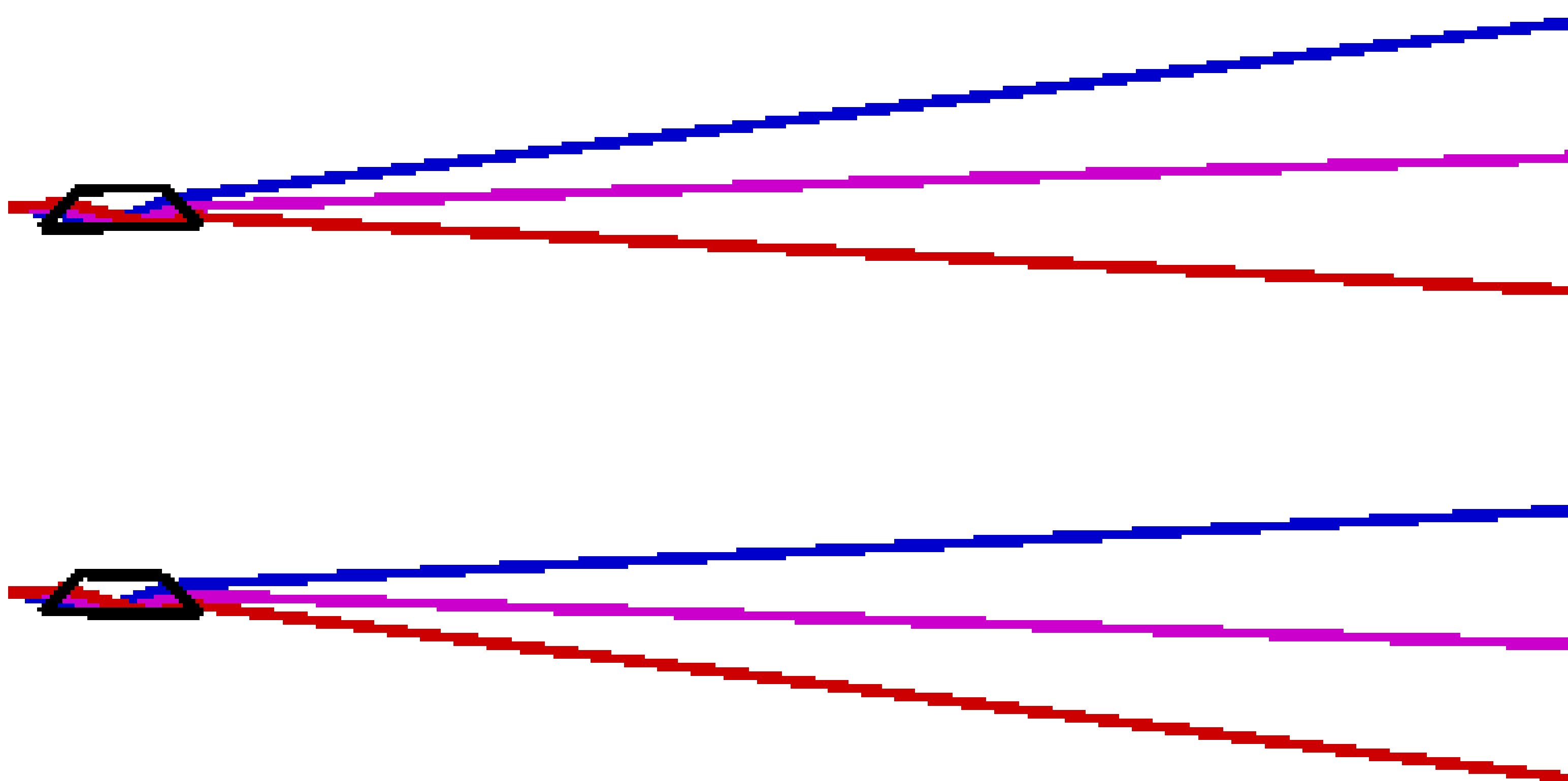


approximation of percept when rotated

## Lesson learned constructing an optical rotator



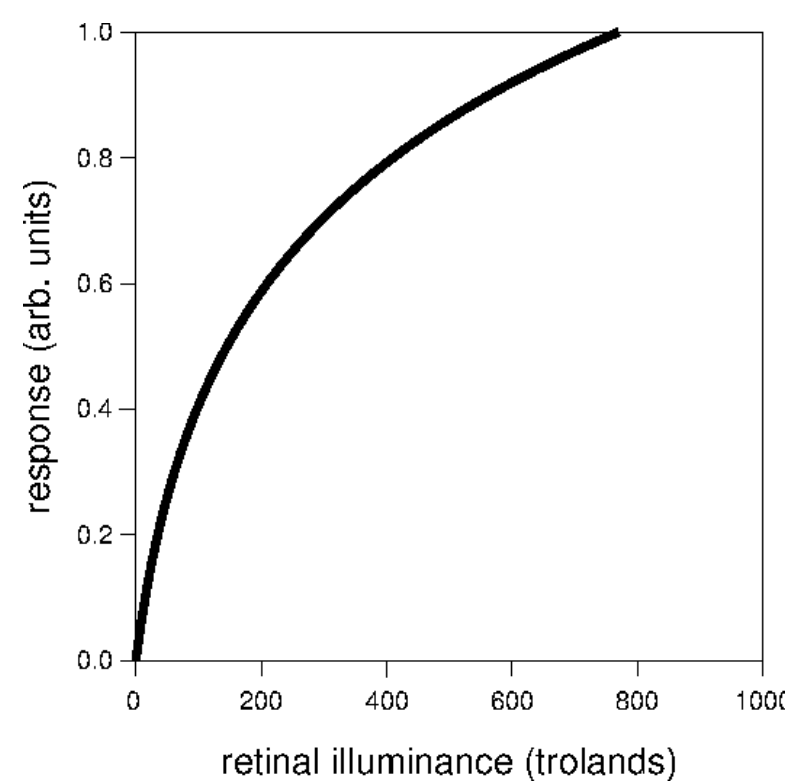
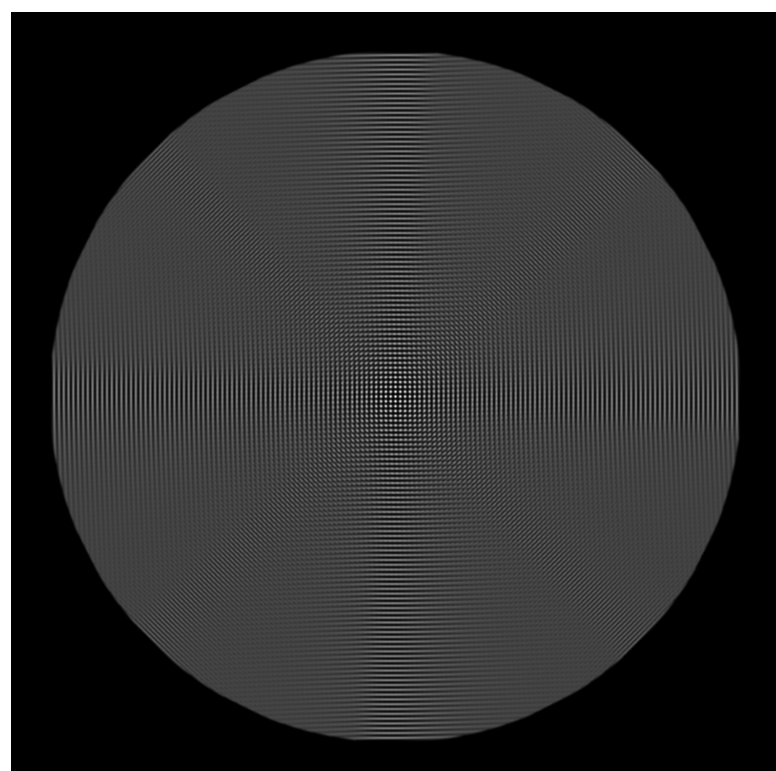
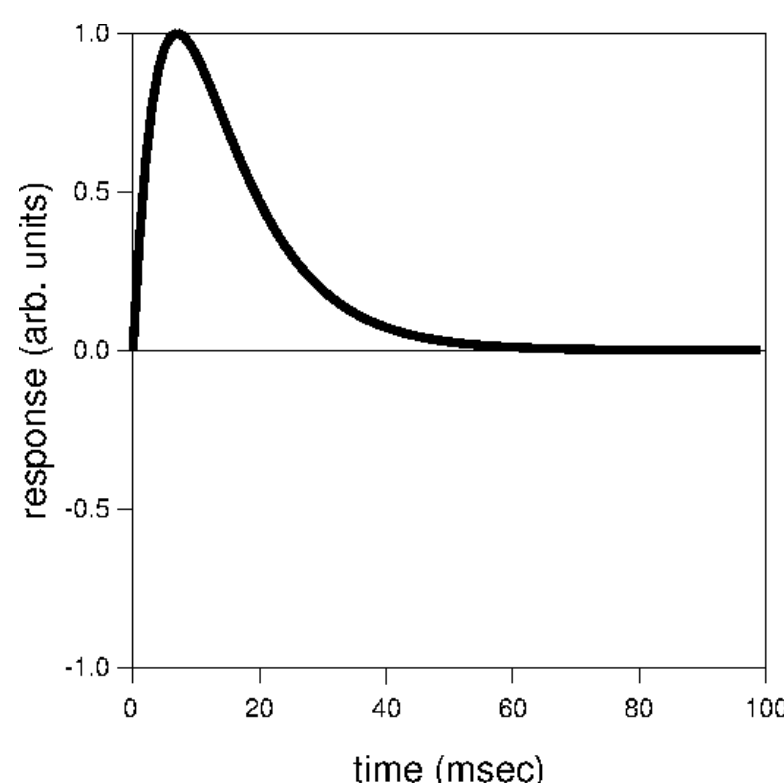
Trajectories for rotation of an off-axis reflection



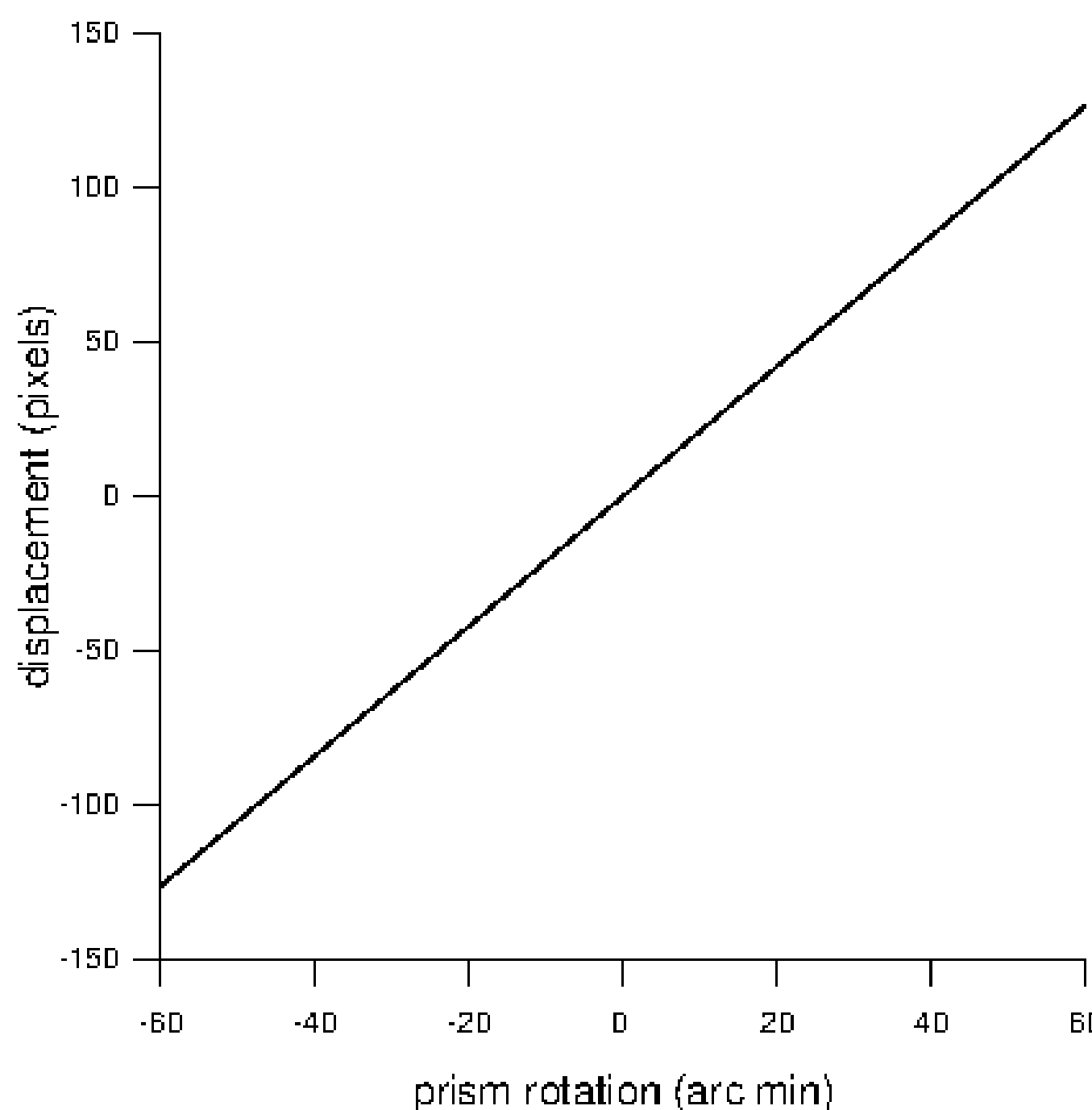
Ray deviations for dove prism rotations of  $\pm 2$  degrees

## Simulations make qualitatively correct predictions

temporal blur  
+  
compressive  
nonlinearity



Ray-tracing simulation reveals that a displacement of the mirror axis by one screen pixel is produced by a prism misalignment of 0.5 arc minutes!?



biphasic blur  
+  
expansive  
nonlinearity

