



SACRAMENTO STATE

Department of Physics & Astronomy Spring 2007

Physics Colloquium Series

"Simple Optical Compensation Technique for π -cell Based Shutter"

The goal of this study was to investigate the performance of a new type of π -cell for use as a liquid crystal shutter. Ideal liquid crystal shutters require complete blocking of undesired images in the dark state and high level of transmission in the bright state in all viewing directions. Toward that end, we modeled the cell using the 'Twist Cell Optics' software package, using parameters for materials available in the optics laboratory. After the performance was optimized, we built several test cells on campus and tested them. We filled the π -cell with low-rotational-viscosity and high-birefringence fluid and used an additional positive birefringence film with the optical axis in the plane of the film according to the model. The contrast ratio of the modeled π -cell was greater than 800:1 for head on viewing and greater than 10:1 in a 45° viewing cone.

Victoria Brandt

Physics Major

Senior Project Talk

Thursday, May 17, 2007

4:00-5:20 PM MND 1015

Open & Free to all Students, Faculty & Public