

Abstract Submitted
for the APR08 Meeting of
The American Physical Society

A hydrocolloid-based photoelastic modulator¹ KYLE BRAUN, JAMES THIELEN, JAMES KAVANAUGH, CHRISTIAN LYTLE, ADAM GREEN, MARTIN JOHNSTON, University of St. Thomas — Birefringent gelatin and other hydrocolloids can serve as the optical elements of simple, inexpensive photoelastic modulators. Driven harmonically by a speaker coil, a small block of gelatin acts as a variable linear retarder and can thus be used to sinusoidally vary the polarization of a laser beam passing through it. We model this effect with Mueller matrices and show that our gelatin modulator behaves as predicted. This uncomplicated yet versatile device is well suited for several types of polarimetry experiments that do not require high precision, and it makes an excellent pedagogical tool for students in advanced undergraduate optics course.

¹This work was supported in part by a grant from the National Science Foundation (DUE #0509869).

Adam Green
University of St. Thomas

Date submitted: 11 Jan 2008

Electronic form version 1.4