

## THEORETICAL AND EXPERIMENTAL ANALYSIS OF IMPERFECT POLARIZER EFFECTS IN MAGNETIC ROTATION SPECTROSCOPY

R.J. BRECHA, L.M. PEDROTTI, *Physics Department, University of Dayton, Dayton, OH 45469-2314.*

An examination of the role of small amounts of ellipticity on magnetic rotation spectroscopy signals is presented. It is found that effects of stress-induced birefringence can very easily be dominant compared to polarizer extinction ratios when analyzing such signals. In the limit of nearly crossed polarizers, an initial ellipticity allows one to probe magnetic circular dichroism as opposed to the more commonly investigated magnetic circular birefringence. A discussion will be presented of the assumptions typically made in previous experiments. In addition, the question of detection sensitivity is addressed in light of this analysis. Finally, experimental results illustrating the various signal regimes are shown, using atmospheric pressure oxygen in the A-band.