COMBINATION OF BIREFRINGENT PLATES FORMING A RETARDER HAVING MARGINAL CHROMATIC ERROR

Usually phase retarders show strong wavelength dependence. In this paper, we have studied the design and characteristics of achromatic cascaded system of birefringent plates. Pancharatnam proposed a combination of three plates and discussed the possibility of fabricating reasonably good achromatic quarter wave plates with a suitable combination of three plates. In this paper we have extended the study of such cascaded system of birefringent plates using matrix analysis unknown at the time of Pancharatnam, who used cumbersome method of spherical trigonometry in his analysis. We, however, used the elegant Jones matrix formalism to derive the general expression for the equivalent retardation of the combination. The new arrangement of three birefringent plates proposed has the promise of producing better achromatic combinations.

Keywords: **Birefringent plate, Achromatic retarder**