MAGNETOELECTRIC JONES SPECTROSCOPY OF ALKALI ATOMS

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Theoretical treatment of the magneto-electric Jones birefringence and dichroism is developed through the bilinear in static electric and magnetic field dipole-forbidden corrections to the amplitude of Rayleigh scattering. In particular cases of orientation of the static fields relative the polarization and wave vectors of monochromatic radiation, the amplitude determines corrections to the refractive index of atomic gas responsible for (i) the Jones birefringence and dichroism, (ii) linear birefringence and dichroism and (iii) directional anisotropy for the monochromatic wave. The analytical equations and numerical data for the indicated corrections, calculated for alkali atoms, determine optimal conditions for observing the effects in vapours. For resonance on *D* state essential enhancement is discovered in the frequency dependence for the ratio of refractive index anisotropy of the Jones effect to the square-root product of corresponding anisotropy determining the Kerr and Cotton-Mouton effects.