

Quantum optics techniques for magnetic field measurement

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Abstract. A quantum optics technique for magnetic field measurement is proposed, in which a beam of light is passed through a polarization analyser incorporating a Wollaston prism and two photodetectors. The analyser has three configurations to analyse the Stokes parameters U , Q , V . The radiation is recorded in the form of two Zeeman spectra. The presence and magnitude of magnetic field are established by a fourth-order parameter (\mathbf{P}_4), which is computed from the difference of statistical characteristics of the Zeeman components.