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[462] Polarization rotation in an electromagnetically induced transparent atomic medium

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We have studied how a coherent phenomenon can control the polarization rotation in the Rb vapour. Experimentally we have observed a sharp rotation spectrum in the vicinity of electromagnetically induced transparency in a V-type system. The dependencies of various system parameters have been investigated. Theoretical models have been developed to explain the observed phenomena. The observed signal can be used for optical locking purposes, in the detection of slow light, to detect the unknown polarization state of a beam, etc. Our study has importance in the various fields of application of the polarization rotation like magnetometry, birefringence lens etc.

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