

## **Propagation of laser light through coherently prepared media**

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**Abstract.** We have measured and calculated transmission of the probe laser light through Rb vapor, after Rb atoms have been prepared in the dark state by the pump laser beam. Space and time separation of generation and probing of dark states, i.e., Ramsey method of separated excitation fields, have been used to control the propagation of the probing laser. We have used two different types of Rb vapor, vapor contained in the vacuum cell and in the cell with the buffer gas, in order to demonstrate how different decoherence mechanism influences the probe propagation and also widths and amplitudes of probe's electromagnetically induced transparency (EIT). Conditions have been identified when the propagation of the probe laser is fully controlled and allowed by the previous preparation of Rb atoms in the dark state. Transient development of the probe Zeeman EIT during the probe pulse propagation was calculated and measured for different magnetic fields, pump and probe laser intensity and length of the dark region, where by dark region we mean spatial distance or time interval between the pump and the probe excitations of the same atom.

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