

Abstract Submitted
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The interaction between lasers and dielectric surfaces assisted by an isotropic source of energy MD. RAJU, MD. KHAIRUZZAMAN, N. LAN-NING, W-T. HSU, C. BAHRIM, Department of Physics, Lamar University — Our method of polarization of light incident at the Brewster angle on a dielectric surface allows finding indices of refraction with a precision of 0.0001 [1]. This precision allows us to generate accurate dispersive curves in visible and near visible range using relative inexpensive equipment. We propose a simple method for finding the dispersive curve for non-magnetic dielectrics using relative inexpensive diode lasers and an isotropic energy source. The idea is based on the scalar addition of energy from various sources on a dielectric surface. Our interpretation is inspired from the classical dipole oscillator model [2]. We use this technique to eventually create a strong coupling between two laser fields assisted by an isotropic source of energy, which simultaneously interact with the same dipoles of the dielectric. This experiment could be used as a simple experimental prove of the destructive interaction between a strong coupling laser and a weak probe laser with the creation of electromagnetic induced transparency in optical materials.

[1] Bahrim C and Hsu W-T, 2009 Am. J. Phys 77(4) 337-343.

[2] Eugene Hecht 'Optics' 4th ed., Addison-Wesley Longman 2002.

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