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**Precise measurements of index of refraction at Brewster angle**

WEI-TAI HSU, Department of Physics, Lamar University, CHRISTIAN BAHRIM, Research Center for Adaptive Data Analysis, National Central University, Chungli, Taiwan — A simple and accurate method is proposed for finding the index of refraction of solid and liquid dielectrics using the polarization of light reflected by a dielectric surface near the Brewster angle. The method allows measuring the Brewster angle with a precision better than 0.01 degrees and the index of refraction with a precision of 0.0001 by running a parabolic fit of the parallel component of the reflectance normalized to the total reflectance in a narrow region of about 15 degrees around the Brewster angle [1]. Our measurement is about 100 times better than other existing methods. The best precision in our measurements is achieved when a computer-based filtering procedure of the experimental reflectance is used during the data acquisition [2]. Our apparatus allows measuring small variation of the index of refraction, such as due to the change in temperature or the interference with another E-field.

[1] Bahrim C and Hsu Wei-Tai, 2009 *Am. J. Phys.* **77** (4) 337-343; [2] Hsu Wei-Tai and Bahrim C, 2009 *Eur. J. Phys.* **30** 1325-1336.

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