Universidade Federal de Pernambuco
DEPARTAMENTO DE FÍSICA - PÓS-GRADUAÇÃO

Colóquio (WEBINAR)

Nonlinear Refraction in Liquids and Gases

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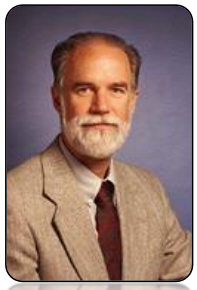

I introduce our nonlinear Beam Deflection (BD) technique for measuring nonlinear refraction and absorption in optical materials. We will show its use for measuring nonlinear refraction in liquids, e.g. CS2, and how it allows separation of bound-electronic and nuclear contributions to the nonlinear refractive index (e.g. molecular reorientation along the polarization direction). We will then extend these measurements to gases, specifically CS2 and air composed primarily of nitrogen and oxygen molecules. We find essentially no dispersion of the nonlinear refractive index of air from the visible to the mid-IR allowing predictions of the nonlinear refraction in the atmosphere at any altitude, which in turn allows for predictions of high intensity laser beam propagation for irradiances below the ionization threshold.

19 de novembro de 2021 (sexta-feira) - 16 horas

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