

HL 41 Hauptvortrag Soukoulis

Zeit: Montag 14:15–15:00

Raum: TU P270

Hauptvortrag

HL 41.1 Mo 14:15 TU P270

Negative index materials: New frontiers in optics — •C. M. SOUKOULIS — Ames-Laboratory and Department of Physics and Astronomy, Iowa State University, Ames, IA 50011 — Research Center of Crete, FORTH, Heraklion, Crete, Greece

The possibility of negative refraction has brought about a reconsideration of many fundamental optical and electromagnetic phenomena. This new degree of freedom has provided a tremendous stimulus for the physics, optics and engineering communities to investigate how these new ideas can be utilized. Many interesting and potentially important effects not possible in positive refracting materials, such as near-field refocusing and sub-diffraction limited imaging, have been predicted to occur when the refractive index changes sign. In this talk, I will review our own work on negative refraction in metamaterials, and describe the possible impact of them as new types of optical elements. In particular, I will present theoretical and experimental results on engineered microstructures designed to have both ϵ and n negative. Results for different polarizations and propagation directions will be presented. Recent results on microstructures operating at 100 THz will be also discussed. Finally, experimental and theoretical results for negative refraction and sub-wavelength resolution in 2D photonic crystals will be presented .

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