

Stuttgarter Physikalisches Kolloquium

Fachbereich Physik, Universität Stuttgart
Max-Planck-Institut für Festkörperforschung
Max-Planck-Institut für Intelligente Systeme

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SONDERKOLLOQUIUM

Freitag, 20. Mai 2016

14:00 Uhr

Hörsaal V 57.01

Universität Stuttgart, Pfaffenwaldring 57, 70569 Stuttgart-Vaihingen

Gastgeber: Prof. Harald Giessen, Universität Stuttgart, Telefon: 0711 - 685-65110

Sculpting Waves at the Extreme

Nader Engheta

University of Pennsylvania

Abstract

Recent development in nanotechnology, nanoscience and materials science and engineering has provided opportunities to engineer structures with unprecedented attributes and characteristics in manipulating waves and fields. We are exploring wave-matter interaction in platforms with extreme scenarios, such as near-zero permittivity and near-zero permeability, and with extreme features such as very high phase velocity, very low energy velocity, nonreciprocal vortices at the nanoscale, giant anisotropy and nonlinearity, “near-zero” photonics, nanoscale computation with optical nanocircuits, and more. Such “sculpting waves at the extreme” will provide us with exciting features and functionalities for wave-based paradigms such as optics, acoustics, and thermodynamics. I will discuss some of our ongoing work in these areas, will present some of the opportunities and challenges, and will forecast some future directions and possibilities.