



Dr. Andrea Alú

The University of Texas at Austin

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Molding Photons and Phonons with Metamaterials and Plasmonics

Metamaterials are artificial materials with properties well beyond what offered by nature, providing unprecedented opportunities to tailor and enhance the interaction between waves with materials. In this talk, I discuss our recent research activity in electromagnetics, nano-optics, acoustics and mechanics, showing how suitably tailored *meta-atoms* and arrangements of them open exciting venues to manipulate and control waves in unprecedented ways. I will discuss our recent theoretical and experimental results, including metamaterials for scattering suppression, nanostructures and metasurfaces to control wave propagation and radiation, large nonreciprocity without magnetism, giant nonlinearities in properly tailored metamaterials, and parity-time symmetric meta-atoms and metasurfaces. Physical insights into these exotic phenomena, new devices based on these concepts, and their impact on technology will be discussed during the talk.

Andrea Alu is the Temple Foundation Endowed Professor #3 at the University of Texas at Austin. He received his Laurea (2001) and PhD (2007) from the University of Roma Tre, Italy, and, after a postdoc at the University of Pennsylvania, he joined the faculty of the University of Texas at Austin in 2009. His current research interests span over a broad range of areas, including metamaterials and plasmonics, electromagnetics, nano-optics, photonics and acoustics. Dr. Alú is a Fellow of IEEE, OSA, SPIE and APS, and has received several scientific awards, including the NSF Alan T. Waterman award (2015), the OSA Adolph Lomb Medal (2013), and the URSI Issac Koga Gold Medal (2011).

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