

Extreme Control of Light and Sound Using Metamaterials

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Lecture: 12:00 PM—2:00 PM



Abstract: In this talk, I discuss our recent research activity in electromagnetics, optics, photonics and acoustics, showing how suitably tailored *meta-atoms* and their arrangements of them open exciting avenues to realize new phenomena for light, radio-waves and sound. I discuss opportunities to tailor the impinging electromagnetic waves in robust and efficient ways, to largely break Lorentz reciprocity and realize isolation without the need of magnetic bias, based on broken time-reversal symmetry induced by mechanical motion, spatio-temporal modulation and/or nonlinearities. I also discuss how broken symmetries in space and space-time can open the opportunity to induce topological order in metamaterials. In the talk, I will also discuss the impact of these concepts from basic science to practical technologies, from classical waves to quantum

Biography: Andrea Alù is a Distinguished Professor at the City University of New York (CUNY), the Founding Director of the Photonics Initiative, CUNY Advanced Science Research Center, and the Einstein Professor of Physics at the CUNY Graduate Center. 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, where he was the Temple Foundation Endowed Professor until Jan. 2018. Dr. Alù is a Fellow of NAI, AAAS, IEEE, OSA, SPIE and APS, and has received several scientific awards, including the Blavatnik National Award in Physical Sciences and Engineering, the IEEE Kiyoo Tomiyasu Award, the Vannevar Bush Faculty Fellowship, and the NSF Alan T. Waterman award.