

Polaritonic Metasurfaces

Prof. Andrea Alù

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Abstract

In this talk, I discuss our recent efforts in the context of nano-optics and photonics, with a special emphasis on strong light-matter interactions enabled by exciton, phonon and electronic resonances in polaritonic metasurfaces. I will discuss our recent theoretical and experimental results in the context of polariton manipulation based on excitons, intersubband transitions and phonons interacting with light. The combination of these features with photonic engineering enables giant optical nonlinearities, efficient nanoscale light manipulation and topological transitions. During the talk, I will discuss the exotic light-matter interactions arising in these systems, and their opportunities for wave physics and photonics technologies

15:30 - July 12, 2023

**IIT Center for Nano Science and Technology
Via Rubattino 81, 20134 - Milano**



About the speaker

Andrea Alù is a Distinguished Professor at the City University of New York (CUNY), the Founding Director of the Photonics Initiative at the 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 the National Academy of Inventors (NAI), the American Association for the Advancement of Science (AAAS), the Institute of Electrical and Electronic Engineers (IEEE), the Materials Research Society (MRS), Optica, the International Society for Optics and Photonics (SPIE) and the American Physical Society (APS). He is a Highly Cited Researcher since 2017, a Simons Investigator in Physics, the director of the Simons Collaboration on Extreme Wave Phenomena Based on Symmetries, and the Editor in Chief of Optical Materials Express. He has received several scientific awards, including the NSF Alan T. Waterman award, the Blavatnik National Award for Physical Sciences and Engineering, the IEEE Kiyo Tomiyasu Award, the ICO Prize in Optics, the OSA Adolph Lomb Medal, the URSI Issac Koga Gold Medal, the Brillouin Medal and the IEEE AP-S Distinguished Achievement Award.

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