

PHYSICS AND ASTRONOMY COLLOQUIUM

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From Cloaking to One-Way Propagation: the Fascinating
Physics and Engineering of Metamaterials

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.



THURSDAY, OCTOBER 13, 2016 | 4:00 PM | HAWKING AUDITORIUM



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