PHYSICS AND ASTRONOMY COLLOQUIUM

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Optics at the Extreme

Recent development in condensed matter physics and nanoscience has made it possible to tailor materials with unusual parameters and characteristics. In my group, we have been exploring light-matter interaction in metamaterials and metastructures with extreme parameters, such near-zero permittivity and near-zero permeability, and with extreme features such as very high phase velocity, very low energy velocity, extremely thin (one-atom-thick metasurfaces), subwavelength nonreciprocal vortexes, extreme anisotropy, giant nonlinearity in phase-change dynamics, “static optics”, nanoscale computation in optical nanocircuits, and more. Such “extreme optics” will provide us with unprecedented features and functionalities in both wave physics and quantum optics and engineering. I will discuss some of our ongoing work in these areas.

THURSDAY, OCTOBER 2, 2014 | 4:00 PM | HAWKING AUDITORIUM

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