

# Colloqui della Classe di Scienze

Anno Accademico 2015/2016

Sala Stemmi | Palazzo della Carovana  
Scuola Normale Superiore  
Piazza dei Cavalieri, 7 - PISA

6 OTTOBRE 2016

ore 15.00

**FEDERICO CAPASSO**

Harvard University, Cambridge MA

*Flat Optics with Metasurfaces*

**ABSTRACT:**

The design of fundamental optical components such as lenses, gratings, and holograms has remained essentially unchanged for at least fifty years, relying on textbook refractive and diffractive optics. Subwavelength structured surfaces known as metasurfaces are leading to a fundamental reassessment of such designs with the emergence of optical components that circumvent the limitations of standard ones and with entirely new functions. Our recent formulation of the generalized laws of reflection and refraction for metasurfaces has led us recently to demonstrate high quality ultrathin dielectric metalenses with diffraction limited performance<sup>2,3</sup>. Finally I will give examples of how this approach can be used to create complex vector beams.

1. M. Khorasaninejad et al. *Science* 352, 1190 (2016)
2. F. Aieta et al. *Science* 347, 1342 (2015)
3. N. Yu et al. *Science* 334, 333 (2011)



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