量子材料科学中心
International Center for Quantum Materials
Weekly Seminar

Metalsurface materials for terahertz wave front control

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- Time: 2:00pm, March. 13, 2013(Wednesday)
- 时间：2013年3月13日（周三）下午2:00
- Venue: Conference Room 607, Science Building 5
- 地点：理科5号楼607

Abstract

A smart and small scale element is quite important for system integration. A practical and promising avenue to the miniaturization of optical devices based on the metalsurface has been proposed. Designed arrays of complementary V-shaped antennas in planar gold films with thicknesses of 100 nm were used to manipulate the light propagation. Each of the V-shaped antennas could be designed separately, therefore, arbitrary distribution of the optical filed with various phases and amplitudes could be obtained. Then, according to the Huygens' secondary source principle, arbitrary manipulations of the light propagation are essentially achieved. The solid experimental results in the terahertz wave band of the focusing and imaging performance of ultrathin planar optical elements ("cylindrical" and "spherical" lenses), image reconstructions of the phase holograms which were comprised of V-shaped antennas arrays provided a convincing demonstration for the design approach of various ultrathin planar optical elements. It can be predicted that the researches on the miniaturization of optical devices will be greatly promoted if functional optical material is introduced into such ultrathin optical elements.

About the Speaker

张岩，分别于1994年和1996年在哈尔滨工业大学获得学士和硕士学位，1996.09-1999.07年为中科院物理所博士研究生；1999.08-2001.08，日本山形大学工学部，日本学术振兴会特别研究员；2001.10-2002.07，香港理工大学电机工程系，副研究员；2002.08-2003.10，德国斯图加特大学应用光学研究所，洪堡学者；2003.11-今，首都师范大学物理系，教授、系主任；2005.04-今，哈尔滨工业大学兼职教授，博士生导师。