



ID de Contribution: 161

Type: **Orale**

Subwavelength polarization optics via helical travelling-wave nanoantennas

jeudi 11 juillet 2019 10:15 (15 minutes)

A wide variety of optical applications and techniques require control of light polarization. To date, there has been no experimental demonstration of tunable polarization control with individual subwavelength devices.

We present and demonstrate the concept of a helical travelling-wave nanoantenna (HTN) consisting of a tiny gold-coated helix end-fired with a rectangular aperture nanoantenna (Fig. 1(a)). The resulting non-resonant hybrid nanoantenna produces a light beam of tunable polarization (elliptical up to circular states) by swirling surface plasmons and taking advantage of optical spin-orbit interaction (Fig. 1(b)).

Four closely packed HTNs are shown to locally convert an incoming light beam into four beams of tunable polarizations and intensities. Moreover, by coupling HTNs of opposite handedness (Fig. 1(c)), we demonstrated a subwavelength waveplate-like structure providing a degree of freedom in polarization control that is forbidden with usual polarization optics and metamaterials.

Indico rendering error

Could not include image: Cannot read image data. Maybe not an image file?

Choix de session parallèle

5.3 SFO: Matériaux, plasmonique

Auteurs principaux: Dr WANG, Mengjia (Institut FEMTO-ST); Dr SALUT, Roland (Institut FEMTO-ST); Dr LU, Huihui (Jinan University); Dr SUAREZ, Miguel Angel (Institut FEMTO-ST); Prof. MARTIN, Nicolas (Institut FEMTO-ST); Dr GROSJEAN, Thierry (Institut FEMTO-ST)

Orateur: Dr GROSJEAN, Thierry (Institut FEMTO-ST)

Classification de Session: Séance Parallèle