

Internship offered in M2 2017-2018

Responsible for internship

Name:

Gallas Bruno

Location:

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Group: Nanostructures and Optics

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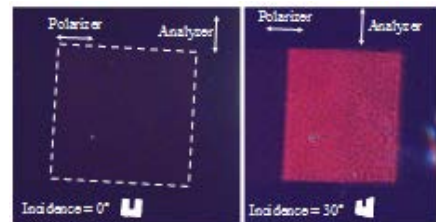
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Group website: <http://www.insp.jussieu.fr/-Nanostructures-et-optique-.html>

Internship topic:

Structural colors in circular polarization

The enhancement of the optical properties associated with localized surface plasmon resonances in metallic objects with dimensions at the nanometric scale (nano-resonators) find numerous applications in nanophotonics. 2D arrays of such nano-resonators, known as metasurfaces, yield new original optical properties. In particular there is a strong interest in creating polarized structural colors which may be observable only under particular conditions and would yield anti-counterfeit tags. We have shown recently that 2D resonators could exhibit optical activity [1]. This opens the way to the creation of circularly polarized structural colors.



Project : During the internship we aim at analyzing the polarized colors that can be obtained with metasurfaces. The link between the shape of the nano-resonators and the perceived color in relation with the observation conditions will be established numerically and experimentally. Test metasurfaces will be realized in the clean room of the INSP using e-beam lithography. The polarization dependent colors will then be measured and compared to the calculated ones.

[1] J. Proust, et al., *ACS Photonics* 3, 1581-1588 (2016)

Techniques involved: lithography, optical measurements, numerical simulations

Type of internship: mixed (numerical and experimental)

Paid internship: Yes

Can this internship be continued for a PhD? Yes

If yes, type of PhD funding envisaged is: ED