Séminaire

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11 heures
Salle 44 (P. Grivet) du C2N site Orsay

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"Electromagnetic metasurfaces: Physics and applications"

Metasurfaces are ultra-thin metamaterials composed by artificial planar meta-atoms arranged in some specific macroscopic orders, which exhibit extraordinary capabilities to control electromagnetic (EM) waves. In this talk, we briefly summarize our latest experimental results on employing metasurfaces to control electromagnetic waves. Specifically, we will show how to realize a photonic spin-Hall effect with nearly 100% efficiencyin both reflection [1] and transmission [2] geometries, how to achieve surface-plasmon couplers that can excite surface plasmon polaritons (SPPs) very efficiently [3,4], and how to actively control the phases of electromagnetic waves in THz [5] and GHz regimes [6], based on a compete phase diagram for metal/insulator/metal metasurface [7].

References

[1] Weijie Luo, *et al.*,, **Adv. Opt. Mater. 3,** 1102 (2015)**.**
[2] Weijie Luo, *et al*., **Phys. Rev. Appl. 7,** 044033 (2017).
[3] Wujiong Sun, *et al.*, **Light: Science & Applications 5,** 16003 (2016).
[4] Jingwen Duan, *et al*., **Sci. Rep. 7** 1354 (2017).
[5] Ziqi Miao, *et al*, **Phys. Rev. X 5,** 041027 (2015).
[6] Hexiu Xu, el al., **Sci. Rep. 6** 27503 (2016); **Sci. Rep. 6** 38255 (2016); **Appl. Phys. Lett. 109**, 193506 (2016)
[7] Che Qu, Shaojie Ma, *et al.*, **Phys. Rev. Lett. 115**, 235503 (2015).