

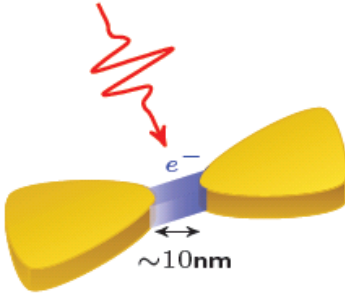
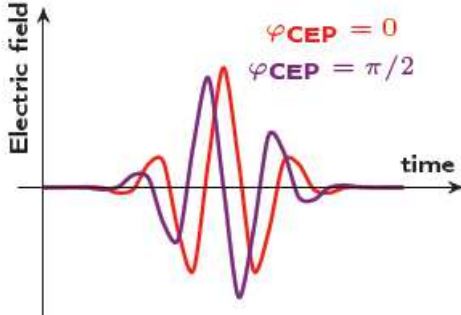
Spécialité de Master « Optique, Matière, Paris »

Stage de recherche (4 mois minimum, à partir de début mars)

Proposition de stage (ne pas dépasser 1 page)

Date de la proposition : 27 novembre 2017

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Titre du stage / internship title: Ultrafast control of the photon assisted transport in plasmonic gap nanoantennas	
Résumé / summary	
<p>We propose to explore the exciting possibilities provided by the combination of plasmonic gap nanoantennas and ultrashort laser pulses. On the one hand, strongly coupled plasmonic gap antennas allow to efficiently confine and enhance electromagnetic fields in tiny spatial regions. When the gap between the surfaces of the metallic structures is reduced down to the nanometer size, the coupling between photons and tunneling electrons strongly affects the linear and nonlinear optical response [1] of the system. On the other hand, due to the recent progress in ultrafast laser science, the electron dynamics in metallic structures can be followed with extraordinary temporal resolution at femtosecond scale [2,3].</p>	
	
plasmonic gap nanoantenna	ultrafast control using ultrashort laser pulses
<p>We will use the non perturbative Time Dependent Density Functional Theory to study the linear and nonlinear electronic transport across the nanogap of a plasmonic antenna under illumination with an ultrashort, few cycle near-infrared laser pulse. The possibilities of ultrafast active control will be explored by varying the carrier-envelope phase and the power of the pulse.</p>	
References	
[1]Marinica et al. Nano Lett. 12, 1333 (2012)	
[2]Krausz and Ivanov, Rev.Mod.Phys. 81, 163 (2009)	
[3]Rybka et al. Nature Photonics, 10, 667 (2016)	

Ce stage pourra-t-il se prolonger en thèse ? Possibility of a PhD ? : oui			
Si oui, financement de thèse envisagé/ financial support for the PhD: école doctorale			
Lumière, Matière, Interactions	x	Lasers, Optique, Matière	x

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