



ΣΕΜΙΝΑΡΙΟ ΚΕΝΤΡΟΥ ΚΒΑΝΤΙΚΗΣ ΠΟΛΥΠΛΟΚΟΤΗΤΑΣ & ΝΑΝΟΤΕΧΝΟΛΟΓΙΑΣ/
CCCN SEMINAR

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15:00-16:00

3rd Floor Seminar Room

Soliplasmon resonances and the nonlinear excitation of surface plasmon polaritons

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Abstract

Soliplasmons are quasiparticles of the electromagnetic field that can be understood as bound states of a spatial soliton and a surface plasmon polariton (SPP). SPP's are electromagnetic surface waves propagating on metal/dielectric interfaces, which are particularly difficult to excite due to their evanescent nature. They constitute the key element of nowadays Plasmonics, a current photonics technology that intends to control light at the nanoscale. In this presentation, I will introduce a new mechanism for the nonlinear excitation of SPP's by means of spatial solitons. This mechanism is based on the existence of a novel resonant interaction phenomenon, which permits to bind spatial solitons and SPP's in a new type of nonlinear stationary state: the soliplasmon. In this presentation, I will review the physical mechanisms behind this type of nonlinear resonances, as well as I will describe the theoretical and numerical approaches developed to analyze them. The presentation will include also a contextualization of the soliplasmon concept in the general framework of nonlinear plasmonics, in which a comparison with other known nonlinear phenomena in plasmonics will be discussed. Finally, the potential application of novel nonlinear plasmonics devices based on soliplasmon resonances will be considered.

