



Summer Students Career-Talk

Juan José Álvarez Serrano

August 28th, 2024





Juan José Álvarez Serrano
(Juanjo, Juan, JJ, ... whatever really)


“La Caixa” Foundation Fellowship – Doctoral INPhINIT

- Ph. D. in Theoretical Nanophotonics
Institute of Physical Chemistry “Blas Cabrera” (IQF-CSIC)
- 2022 Summer Student at DESY

2022
B.Sc. in Physics
(**UAM**)



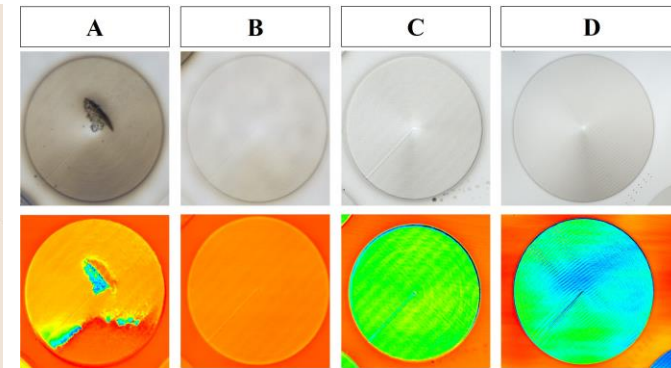
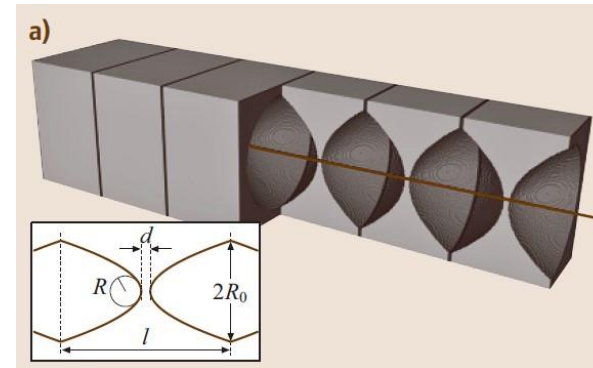
 Alcalá de Henares, Madrid, **Spain**.

 Basketball and my cat.



The DESY Experience

- Centre for X-Ray and Nanoscience
- Experimental Project:
Laser Ablation for Diamond X-Ray Optics
- Friends for life





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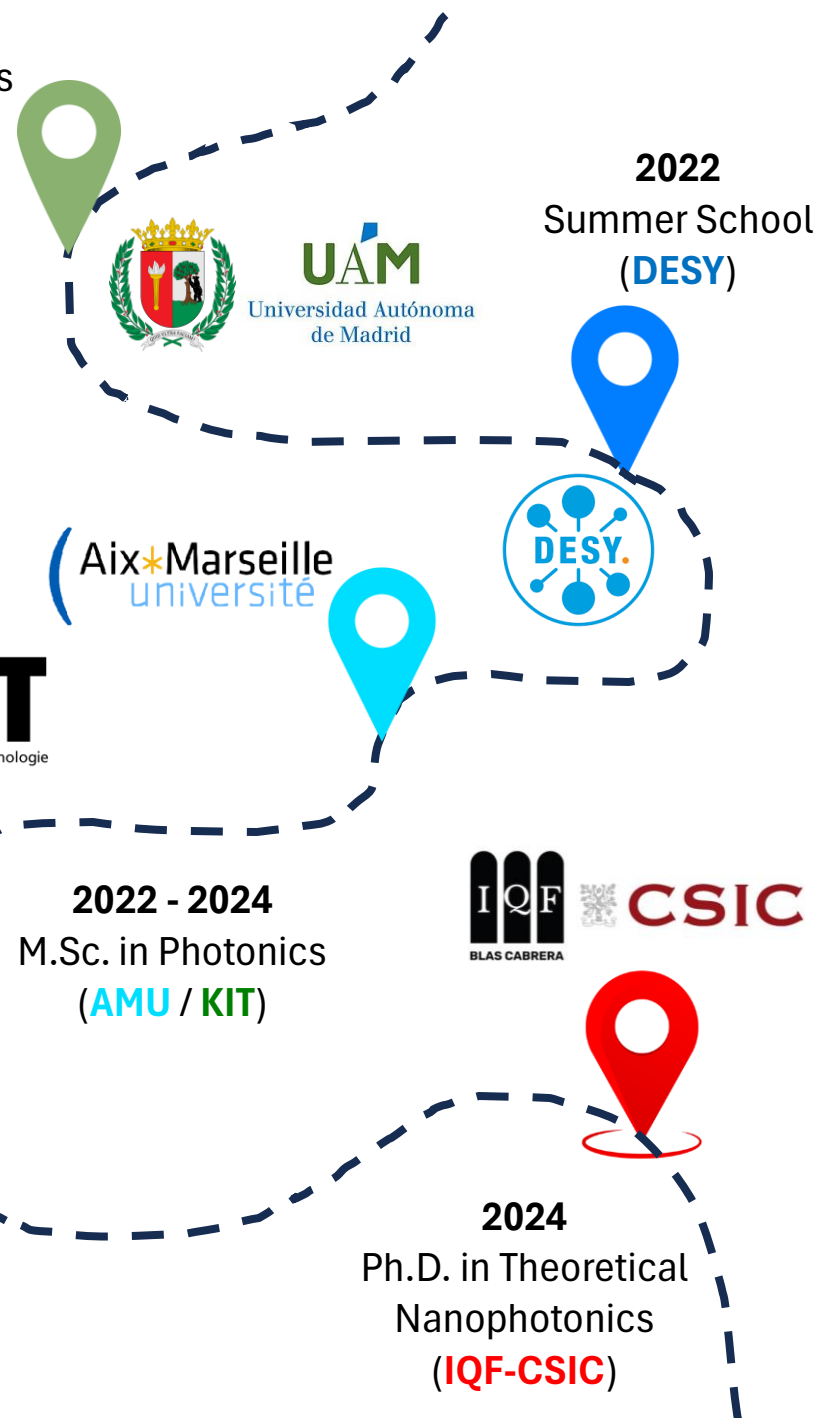
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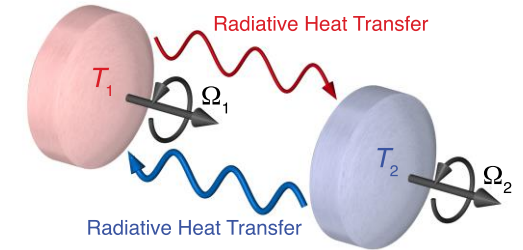
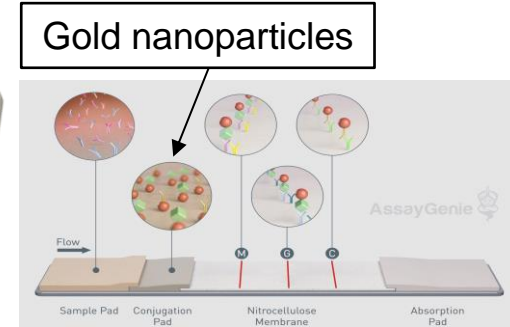
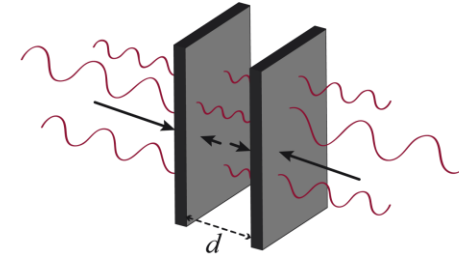
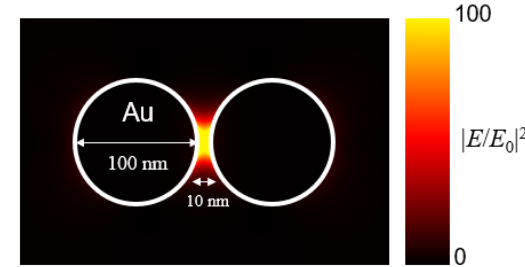
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Theoretical Nanophotonics Group

Study light-matter interaction at the nanoscale

- **Optical response** of nanoparticles: graphene, metals ...
- **Collective effects** of nanoparticles in lattices: geometrical effects, lattice resonances ...
- Phenomena induced by **EM field fluctuations**: radiative heat transfer, Casimir forces, ...

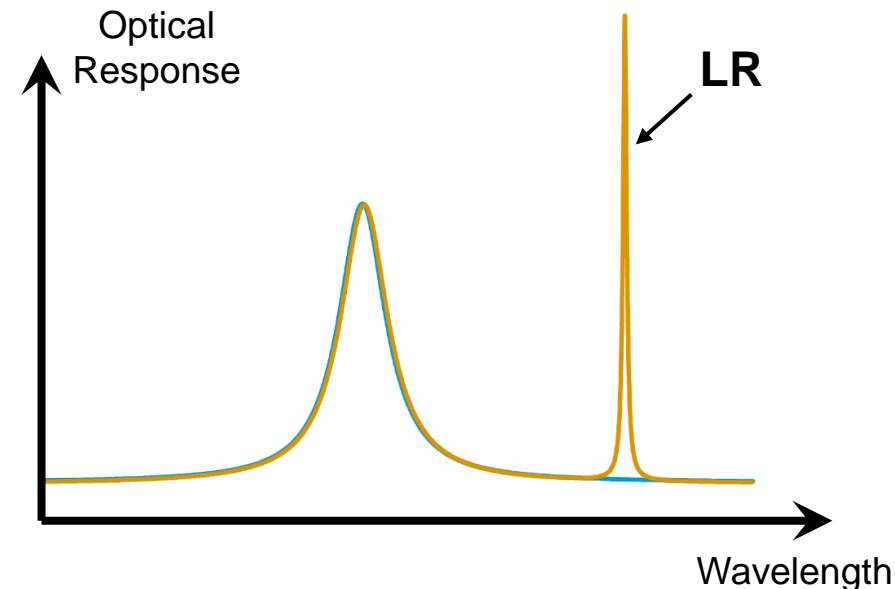


Ph.D. student (starting Fall 2024)

“La Caixa” Foundation Fellowship – Doctoral INPhINIT

Optical Response of Periodic Arrays of Nanostructures

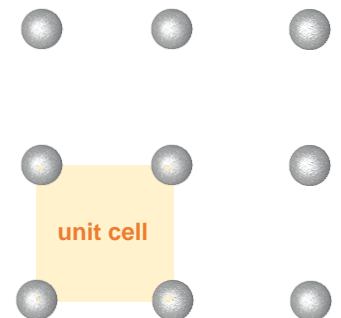
- **Lattice Resonances**
 - Precise and efficient nanoscale light sources
 - Extremely accurate biosensors



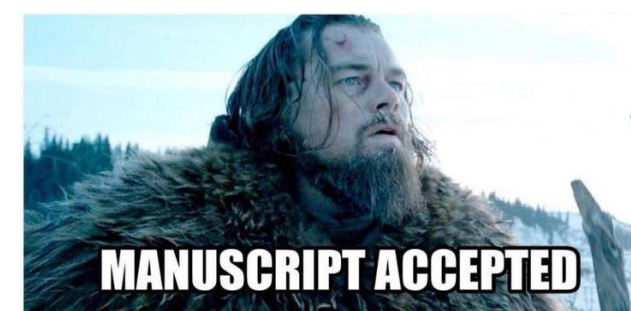
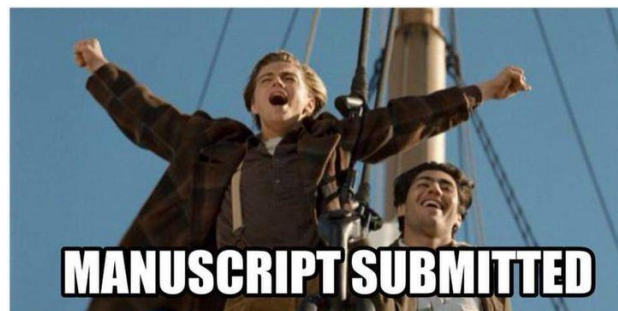
Single-particle



Periodic Array



- Publication of two articles earlier in the year:



Novel way to excite LR from electric-magnetic interactions

Tailoring LRs to achieve perfect absorption in 2D arrays

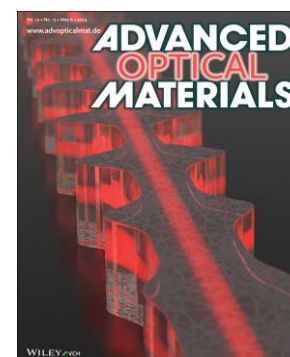
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Normal Incidence Excitation of Out-of-Plane Lattice Resonances in Bipartite Arrays of Metallic Nanostructures

Juan J. Alvarez-Serrano, Juan R. Deop-Ruano, Vincenzo Aglieri, Andrea Toma, and Alejandro Manjavacas*

ADVANCED OPTICAL MATERIALS

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Perfect Absorption with Independent Electric and Magnetic Lattice Resonances in Metallo-Dielectric Arrays

Luis Cerdán, Juan R. Deop-Ruano, Juan J. Alvarez-Serrano, Alejandro Manjavacas ✉

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(Link to our group's homepage)

