

Prof. F. Javier García de Abajo

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Date of birth: June 12, 1964 | Place of birth: Burgos, Spain | Nationality: Spanish

SCIENTIFIC EDUCATION

- 1993 PhD Physics, University of the Basque Country, Spain
- 1987 MSc Physics, University of the Basque Country, Spain

CURRENT POSITIONS

- Leader of the Nanophotonics Theory Group at ICFO, Barcelona, Spain
- ICREA Research Professor, Catalan Institute for Research and Advanced Studies, Barcelona, Spain

PREVIOUS POSITIONS

- 2008-2013 Research Professor, Consejo Superior de Investigaciones Científicas (CSIC), Spain
- 2006-2008 Senior Scientist, Consejo Superior de Investigaciones Científicas (CSIC), Spain
- 2000-2006 Staff Scientist, Consejo Superior de Investigaciones Científicas (CSIC), Spain
- 1997-2000 Visiting Scientist, Lawrence Berkeley National Laboratory, California, USA
- 1993-1997 Associate Professor, University of the Basque Country, Spain
- 1989-1993 Assistant Professor, University of the Basque Country, Spain

RESEARCH PROFILE

García de Abajo is an expert in the science of light, free electrons, and their interaction with atoms, molecules, and material nanostructures. He has predicted and explained new phenomena that include collective electron excitations –plasmons– in atomic-scale systems (e.g., molecules and nanographenes); ultrafast electron-beam interactions with localized optical fields; strong molecule–plasmon coupling; ultrafast radiative heat transfer; quantum friction; and others. Many of his predictions have been corroborated experimentally. He maintains an intense research agenda covering a wide range of topics in collaboration with a network of groups in the fields of (1) electron microscopy (EELS, cathodoluminescence, and ultrafast spectroscopies); (2) 2D polaritonics and optoelectronics; (3) quantum and nonlinear nanophotonics; (4) quantum interactions of electron beams, light, and polaritons; (5) optical biosensing; (6) quantum friction, radiative heat transfer, and optical forces.

SCIENTIFIC PRODUCTION

- **428 journal papers**; 34 cover images; **>44,000/60,000 citations**, **h=100/117** ([Web of Science](#)/[G. Scholar](#))
- **277 invited presentations** at international conferences, of which **49 keynotes** and **14 plenaries**
- Number 12 in career-long impact among Spanish scientists in all disciplines according to the Stanford-based list, and number 69 in Applied Physics worldwide according to that list.
- Co-inventor on 7 patents

DISTINCTIONS AND AWARDS

- 2021 Distinguished Scientist (PIFI), Chinese Academy of Sciences (CAS)
- 2020 Humboldt Research Award, Alexander von Humboldt Foundation
- 2019 Science of Light Prize, European Physical Society (EPS)
- 2018 ERC Advanced Grant
- 2015, 2019, 2021 Highly Cited Researcher (Web of Science)
- 2010 Outstanding Referee, American Physical Society
- 2008 Fellow, Optical Society of America (OSA)
- 2007 Joop Los Fellow, AMOLF, Amsterdam
- 2006 Fellow, American Physical Society (APS)

SUPERVISION

- **Past:** 14 PhD students, 19 postdocs

- **Present research group:** 5 PhD students, 4 postdocs

EDITORIAL ACTIVITIES

- 2023 Associate Editor, Science Advances (AAAS)
- 2020-present Associate Editor, ACS Photonics (ACS)
- 2018-present Member, Senior Advisory Panel, JPhys. Photonics (IOP)
- 2018-2019 Member, Editorial Advisory Panel, ACS Photonics (ACS)
- 2012-2016 Member, Editorial Board, Nanophotonics (de Gryuter)
- 2010-2016 Deputy Editor, Optics Express (OSA)
- 2007-2013 Member, Editorial Advisory Board, Metamaterials (Elsevier)
- 2006-2010 Associate Editor, Optics Express (OSA)

ORGANIZATION OF SCIENTIFIC MEETINGS

- Member of the scientific board in >40 conferences under the umbrella of CLEO, MRS, OSA, and SPIE, as well as a committee member in several events with >300 participants, including Metamaterials, Rome, 2007; Metamaterials, Pamplona, 2008; Intl. Conference on Surface-Plasmon Photonics, Ottawa 2013; Intl. Conference on Nanophotonics ICNP/AOM, Hong Kong, 2013; Near-Field Optics, Snowbird 2014; NanoMeta, Seefeld 2015; Metamaterials, Oxford 2015; and Intl. Conference on Surface-Plasmon Photonics, Taipei 2017; Metamaterials, Espoo, 2018; International Microscopy Congress (session IT13), Sydney, 2018; E-MRS Spring Meeting, Nice, May 2019
- 2023 Chair, Nanophotonics and Micro/Nano Optics Conference (NANOP), Barcelona
- 2023 Chair, International School on the Frontiers of Light, Barcelona
- 2022 Co-chair, 12th Conference on Ultrafast Surface Dynamics, Benasque
- 2021-2024 Member, Commission 17, International Union of Pure and Applied Physics (IUPAP)
- 2019 Co-chair, Electron Beam Spectroscopy for Nanophotonics, Orsay
- 2017 Chair, Electron Beam Spectroscopy for Nanophotonics, Sitges, Spain
- 2016 Co-chair, Workshop on Quantum and Topological Nanophotonics, Singapore
- 2016 Co-chair, Plasmonics and Beyond, as part of the APS March meeting, Baltimore
- 2014 Co-chair, Electron Beam Spectroscopy for Nanophotonics, Amsterdam
- 2005 Chair, Metamaterials for Microwave and Optical Technologies Workshop, Donostia
- 2003 Chair, Optical Properties of Complex Materials Workshop, Donostia

REVIEWING ACTIVITIES

- 2022 Member, Review Panel, Wallenberg Initiative Materials Science for Sustainability
- 2021 Member, Research into the Science of Light Jury, EPS-QEOD
- 2020-present Member, International Scientific Committee, ENSEMBLE3 Ctr. of Excellence, Warsaw
- 2019 Member, Fresnel Prize Committee, European Physical Society (EPS)
- 2016-2017 Member, Optics Review Panel, Academy of Finland
- 2015 Member, Materials Theory Award Committee, Materials Research Society (MRS)
- 2015-2023 Member of four project evaluation committees, Spanish Ministry of Science and Innovation (MICINN)
- 2015-2016 Member, Academy Fellows Nomination Committee, Chalmers University
- 2012-2014 Advisor, CORE Network, Samsung Advanced Institute of Technology (SAIT)
- 2009-2011 Member, Advisory Panel, EPSRC Photonic Metamaterials Programme, Southampton
- 2007 Member, Recruitment Committee, ICREA, Barcelona
- 2004-2008 Member of nine project review committees, European Commission
- Reviewer in >20 proposals/year for funding agencies in Europe, Asia (mainly Hong Kong, Korea, and Singapore), and the US

CURRENT NETWORK OF COLLABORATIONS

Atwater (Caltech), Basov (Columbia University), Batson (Rutgers), Carbone (EPFL, Lausanne), Kociak (UPS, Orsay), Dai (NCNT, Beijing), Halas and Nordlander (Rice University), Kaminer (Technion), Konečná (Brno University), Koppens (ICFO), Liz-Marzán (Biomagune), Mortensen (SDU, Odense), Novotny (ETH, Zurich), Ortega (DIPC), Polman (AMOLF), Ropers (Göttingen), Sannomiya (TIT, Tokyo), Sun (Aalto University), Vanacore (Milano-Bicocca), Walther (University of Vienna), and Zheludev (ORC, Southampton).

TEN SELECTED PUBLICATIONS DURING THE LAST TEN YEARS

1. *Gate-tunable negative refraction of mid-infrared polaritons*, H. Hu, N. Chen, H. Teng, R. Yu, M. Xue, K. Chen, Y. Xiao, Y. Qu, D. Hu, J. Chen, Z. Sun, P. Li, F. J. García de Abajo, and Q. Dai, *Science* **379**, 558-561 (2023)
2. *Entangling free electrons and optical excitations*, A. Konečná, F. Iyikanat, and F. J. García de Abajo, *Science Advances* **8**, eabo7853 (2022)
3. *Optical modulation of electron beams in free space*, F. J. García de Abajo and A. Konečná, *Physical Review Letters* **126**, 123901 (2021) [Editor's Suggestion]
4. *Optical excitations with electron beams: Challenges and opportunities*, F. J. García de Abajo and V. Di Giulio, *ACS Photonics* **8**, 945-974 (2021) [Cover Image]
5. *Probing quantum optical excitations with fast electrons*, V. Di Giulio, M. Kociak, and F. J. García de Abajo, *Optica* **6**, 1524-1534 (2019)
6. *Plasmonics in atomically thin crystalline silver films*, Z. M. Abd El-Fattah, V. Mkhitarian, J. Brede, L. Fernández, C. Li, Q. Guo, A. Ghosh, A. Rodríguez Echarri, D. Naveh, F. Xia, J. E. Ortega, and F. J. García de Abajo, *ACS Nano* **13**, 7771-7779 (2019) [Cover Image]
7. *Plasmon-assisted high-harmonic generation in graphene*, J. D. Cox, A. Marini, and F. J. García de Abajo, *Nature Communications* **8**, 2 (2017)
8. *Polaritons in van der Waals materials*, D. N. Basov, M. M. Fogler, and F. J. García de Abajo, *Science* **354**, 195 (2016)
9. *Tunable plasmons in atomically thin gold nanodisks*, A. Manjavacas and F. J. García de Abajo, *Nature Communications* **5**, 3548 (2014)
10. *Graphene plasmonics: Challenges and opportunities*, F. J. García de Abajo, *ACS Photonics* **1**, 135-152 (2014)

PUBLICATIONS**REGULAR PAPERS**

- 429.-** *Attosecond electron microscopy by free-electron homodyne detection*, J. H. Gaida, H. Lourenço-Martins, M. Siviş, T. Rittmann, A. Feist, F. J. García de Abajo, and C. Ropers, *Nature Photonics*, DOI: 10.1038/s41566-024-01380-8
- 428.-** *Toward complete optical coupling to confined surface polaritons*, S. Abdullah, E. J. C. Dias, J. Krpenský, V. Mkhitarian, and F. J. García de Abajo, *Nature Photonics*, DOI: 10.1021/acsp Photonics.3c01742
- 427.-** *Ultraconfined plasmons in atomically thin crystalline silver nanostructures*, V. Mkhitarian, A. P. Weber, S. Abdullah, L. Fernández, Z. M. Abd El-Fattah, I. Piquero-Zulaica, H. Agarwal, K. García Díez, F. Schiller, J. E., and F. J. García de Abajo, *Advanced Materials*, DOI: 10.1002/adma.202302520 [Cover Image]
- 426.-** *Synthesis of tailored nanostructured gold surfaces for SERS applications by controlled seed deposition and growth*, M. Giardino, I. Mannelli, R. Yu, F. J. García de Abajo, V. Pruneri, and D. Janner, *Applied Surface Science* **649**, 159076 (2024)
- 425.-** *Radiative loss of coherence in free electrons: a long-range quantum phenomenon*, C. I. Velasco, V. Di Giulio, and F. J. García de Abajo, *Light: Science & Applications* **13**, 31 (2024)
- 424.-** *Nanophotonics for pair production*, V. Di Giulio and F. J. García de Abajo, *Nature Communications* **14**, 8189 (2023)
- 423.-** *Lorentz microscopy of optical fields*, J. H. Gaida, H. Lourenço-Martins, S. V. Yalunin, A. Feist, M. Siviş, T. Hohage, F. J. García de Abajo, and C. Ropers, *Nature Communications* **14**, 6545 (2023)
- 422.-** *Exciton-assisted electron tunneling in van der Waals heterostructures*, L. Wang, S. Papadopoulos, F. Iyikanat, J. Zhang, J. Huang, K. Watanabe, T. Taniguchi, M. Calame, M. L. Perrin, F. J. García de Abajo, and L. Novotny, *Nature Materials* **22**, 1094-1099 (2023)
- 421.-** *Nonlinear photoluminescence in gold thin films*, Á. Rodríguez Echarri, F. Iyikanat, S. Boroviks, N. A. Mortensen, J. D. Cox, and F. J. García de Abajo, *ACS Photonics* **10**, 2918-2929 (2023)
- 420.-** *Highly directional single-photon source*, A. Manjavacas and F. J. García de Abajo, *Nanophotonics* **12**, 3351-3358 (2023)
- 419.-** *μeV electron spectromicroscopy using free-space light*, Y. Auad, E. J. C. Dias, M. Tencé, J.-D. Blazit, X. Li, L. F. Zagonel, O. Stéphan, L. H. G. Tizei, F. J. García de Abajo, and M. Kociak, *Nature Communications* **14**, 4442 (2023)
- 418.-** *Multi-plasmon effects and plasmon satellites in photoemission from nanostructures*, P. A. D. Gonçalves and F. J. García de Abajo, *Nanoscale* **15**, 11852-11859 (2023) [Cover Image]

- 417.-** *Generation and control of localized terahertz fields in photoemitted electron plasmas*, E. J. C. Dias, I. Madan, S. Gargiulo, F. Barantani, M. Yannai, G. M. Vanacore, I. Kaminer, F. Carbone, and F. J. García de Abajo, *Nanoscale Advances* **5**, 3634-3645 (2023) [Cover Image]
- 416.-** *Free-electron interactions with van der Waals heterostructures: a source of focused X-ray radiation*, X. Shi, Y. Kurman, M. Shentcis, L. J. Wong, F. J. García de Abajo, and I. Kaminer, *Light: Science & Applications* **12**, 148 (2023)
- 415.-** *Spatiotemporal electron beam focusing through parallel interactions with shaped optical fields*, F. J. García de Abajo and C. Ropers, *Physical Review Letters* **130**, 246901 (2023)
- 414.-** *Maximal violation of Kirchhoff's law in planar heterostructures*, L. Wang, F. J. García de Abajo, and G. T. Papadakis, *Physical Review Research* **5**, L022051 (2023)
- 413.-** *Interrogating quantum nonlocal effects in nanoplasmonics through electron-beam spectroscopy*, P. A. D. Gonçalves and F. J. García de Abajo, *Nano Letters* **23**, 4242-4249 (2023)
- 412.-** *Hyperbolic whispering-gallery phonon polaritons in boron nitride nanotubes*, X. Guo, N. Li, X. Yang, R. Qi, C. Wu, R. Shi, Y. Li, Y. Huang, F. J. García de Abajo, E.-G. Wang, P. Gao, and Q. Dai, *Nature Nanotechnology* **18**, 529-534 (2023)
- 411.-** *Single-pixel imaging in space and time with optically modulated free electrons*, A. Konečná, E. Rotunno, V. Grillo, F. J. García de Abajo, and G. M. Vanacore, *ACS Photonics* **10**, 1463-1472 (2023)
- 410.-** *Visualizing the nanoscopic field distribution of whispering-gallery modes in a dielectric sphere by cathodoluminescence*, I. Machfuudzoh, T. Hinamoto, F. J. García de Abajo, H. Sugimoto, M. Fujii, and T. Sannomiya, *ACS Photonics* **10**, 1434-1445 (2023)
- 409.-** *Polaritons in van der Waals heterostructures*, X. Guo, W. Lyu, T. Chen, Y. Luo, C. Wu, B. Yang, Z. Sun, F. J. García de Abajo, X. Yang, and Q. Dai, *Advanced Materials* **35**, 2201856 (2023)
- 408.-** *Charge dynamics electron microscopy: Nanoscale imaging of femtosecond plasma dynamics*, I. Madan, E. J. C. Dias, S. Gargiulo, F. Barantani, M. Yannai, G. Berruto, T. LaGrange, L. Piazza, T. T. A. Lummen, R. Dahan, I. Kaminer, G. M. Vanacore, F. J. García de Abajo, and F. Carbone, *ACS Nano* **17**, 3657-3665 (2023)
- 407.-** *Ultrafast electron microscopy of nanoscale charge dynamics in semiconductors*, M. Yannai, R. Dahan, A. Gorlach, Y. Adiv, K. Wang, I. Madan, S. Gargiulo, F. Barantani, E. J. C. Dias, G. M. Vanacore, N. Rivera, F. Carbone, F. J. García de Abajo, and I. Kaminer, *ACS Nano* **17**, 3645-3656 (2023)
- 406.-** *Nonlocal and cascaded effects in nonlinear graphene nanoplasmonics*, T. P. Rasmussen, A. Rodríguez Echarri, F. J. García de Abajo, and J. D. Cox, *Nanoscale* **15**, 3150-3158 (2023) [Cover Image]
- 405.-** *Free-electron-driven X-ray caustics from strained van der Waals materials*, X. Shi, M. Shentcis, Y. Kurman, L. J. Wong, F. J. García de Abajo, and I. Kaminer, *Optica* **10**, 292-300 (2023)
- 404.-** *Gate-tunable negative refraction of mid-infrared polaritons*, H. Hu, N. Chen, H. Teng, R. Yu, M. Xue, K. Chen, Y. Xiao, Y. Qu, D. Hu, J. Chen, Z. Sun, P. Li, F. J. García de Abajo, and Q. Dai, *Science* **379**, 558-561 (2023)
- 403.-** *Simultaneous nanoscale excitation and emission mapping by cathodoluminescence*, T. Matsukata, S. Ogura, F. J. García de Abajo, and T. Sannomiya, *ACS Nano* **16**, 21462-21470 (2022)
- 402.-** *Optical-cavity mode squeezing by free electrons*, V. Di Giulio and F. J. García de Abajo, *Nanophotonics* **11**, 4659-4670 (2022)
- 401.-** *Simultaneous imaging of dopants and free charge carriers by monochromated EELS*, H. Yang, A. Konečná, X. Xu, S.-W. Cheong, P. E. Batson, F. J. García de Abajo, and E. Garfunkel, *ACS Nano* **16**, 18795-18805 (2022)
- 400.-** *Entangling free electrons and optical excitations*, A. Konečná, F. Iyikanat, and F. J. García de Abajo, *Science Advances* **8**, eabo7853 (2022)
- 399.-** *Optical control of high-harmonic generation at the atomic thickness*, Y. Wang, F. Iyikanat, X. Bai, X. Hu, S. Das, Y. Dai, Y. Zhang, L. Du, S. Li, H. Lipsanen, F. J. García de Abajo, and Z. Sun, *Nano Letters* **22**, 8455-8462 (2022)
- 398.-** *Optical manipulation of matter waves*, K. Akbari, V. Di Giulio, and F. J. García de Abajo, *Science Advances* **8**, eabq2659 (2022)
- 397.-** *Ultrafast transverse modulation of free electrons by interaction with shaped optical fields*, I. Madan, V. Leccese, A. Mazur, F. Barantani, T. LaGrange, A. Sapozhnik, Ph. M. Tengdin, S. Gargiulo, E. Rotunno, J.-C. Olaya, I. Kaminer, V. Grillo, F. J. García de Abajo, F. Carbone, and G. M. Vanacore, *ACS Photonics* **9**, 3215-3224 (2022)

- 396.-** *Doping-driven topological polaritons in graphene/ α -MoO₃ heterostructures*, H. Hu, N. Chen, H. Teng, R. Yu, Y. Qu, J. Sun, M. Xue, D. Hu, B. Wu, C. Li, J. Chen, M. Liu, Z. Sun, Y. Liu, P. Li, S. Fan, F. J. García de Abajo, and Q. Dai, *Nature Nanotechnology* **17**, 940-946 (2022)
- 395.-** *An image interaction approach to quantum-phase engineering of two-dimensional materials*, V. Di Giulio, P. A. D. Gonçalves, and F. J. García de Abajo, *Nature Communications* **13**, 5175 (2022)
- 394.-** *High-harmonic generation enhancement with graphene heterostructures*, I. Alonso Calafell, L. A. Rozema, A. Trenti, J. Bohn, E. J. C. Dias, P. K. Jenke, K. S. Menghrajani, D. Alcaraz Iranzo, F. J. García de Abajo, F. H. L. Koppens, E. Hendry, and P. Walther, *Advanced Optical Materials* **10**, 2200715 (2022)
- 393.-** *Complete excitation of discrete quantum systems by single free electrons*, F. J. García de Abajo, E. J. C. Dias, and V. Di Giulio, *Physical Review Letters* **129**, 093401 (2022)
- 392.-** *Role of symmetry breaking in observing strong molecule–cavity coupling using dielectric microspheres*, A. B. Vasista, E. J. C. Dias, F. J. García de Abajo, and W. L. Barnes, *Nano Letters* **22**, 6737-6743 (2022)
- 391.-** *Sub-nanometer mapping of strain-induced band structure variations in planar nanowire core-shell heterostructures*, S. Martí-Sánchez, M. Botifoll, E. Oksenberg, C. Koch, C. Borja, M. C. Spadaro, V. Di Giulio, Q. Ramasse, F. J. García de Abajo, E. Joselevich, and J. Arbiol, *Nature Communications* **13**, 4089 (2022)
- 390.-** *Tunable planar focusing based on hyperbolic phonon polaritons in α -MoO₃*, Y. Qu, N. Chen, H. Teng, H. Hu, J. Sun, R. Yu, D. Hu, M. Xue, C. Li, B. Wu, J. Chen, Z. Sun, M. Liu, Y. Liu, F. J. García de Abajo, and Q. Dai, *Advanced Materials* **34**, 2105590 (2022)
- 389.-** *Low-loss tunable infrared plasmons in the high-mobility perovskite (Ba,Lu)SnO₃*, H. Yang, A. Konečná, X. Xu, S.-W. Cheong, E. Garfunkel, F. J. García de Abajo, and P. E. Batson, *Small* **18**, 2106897 (2022)
- 388.-** *Inelastic Mach-Zehnder interferometry with free electrons*, C. W. Johnson, A. E. Turner, F. J. García de Abajo, and B. J. McMorran, *Physical Review Letters* **128**, 147401 (2022)
- 387.-** *Atomic Floquet physics revealed by free electrons*, E. Arqué López, V. Di Giulio, and F. J. García de Abajo, *Physical Review Research* **4**, 013241 (2022)
- 386.-** *Active control of micrometer plasmon propagation in suspended graphene*, H. Hu, R. Yu, H. Teng, D. Hu, N. Chen, Y. Qu, X. Yang, X. Chen, A. S. McLeod, P. Alonso-González, X. Guo, C. Li, Z. Yao, Z. Li, J. Chen, Z. Sun, M. Liu, F. J. García de Abajo, and Q. Dai, *Nature Communications* **13**, 1465 (2022)
- 385.-** *Direct generation of entangled photon pairs in nonlinear optical waveguides*, A. Rodríguez Echarri, J. D. Cox, and F. J. García de Abajo, *Nanophotonics* **11**, 1021-1032 (2022)
- 384.-** *Probing electronic states in monolayer semiconductors through static and transient third-harmonic spectroscopy*, Y. Wang, F. Iyikanat, H. Rostami, X. Bai, X. Hu, S. Das, Y. Dai, L. Du, Y. Zhang, S. Li, H. Lipsanen, F. J. García de Abajo, and Z. Sun, *Advanced Materials* **34**, 2107104 (2022)
- 383.-** *Unveiling the coupling of single metallic nanoparticles to whispering-gallery microcavities*, Y. Auad, C. Hamon, M. Tencé, H. Lourenço-Martins, V. Mkhitarian, O. Stéphan, F. J. García de Abajo, L. H. G. Tizei, and M. Kociak, *Nano Letters* **22**, 319-327 (2022)
- 382.-** *Nonlinear plasmonic response in atomically thin metal films*, A. Rodríguez Echarri, F. Iyikanat, J. D. Cox, and F. J. García de Abajo, *Nanophotonics* **10**, 4149-4159 (2021)
- 381.-** *Inelastic scattering of electron beams by nonreciprocal nanostructures*, R. Yu, A. Konečná, and F. J. García de Abajo, *Physical Review Letters* **127**, 157404 (2021)
- 380.-** *Revealing nanoscale confinement effects on hyperbolic phonon polaritons with an electron beam*, A. Konečná, J. Li, J. H. Edgar, F. J. García de Abajo, and J. A. Hachtel, *Small* **17**, 2103404 (2021) [Cover Image]
- 379.-** *Atomically-precise texturing of hexagonal boron nitride nanostripes*, K. Ali, L. Fernández, M. A. Kherelden, A. A. Makarova, I. Piš, F. Bondini, J. Lawrence, D. G. de Oteyza, D. Y. Usachov, D. V. Vyalikh, F. J. García de Abajo, Z. M. Abd El-Fattah, J. E. Ortega, and F. Schiller, *Advanced Science* **8**, 2101455 (2019) [Cover Image]
- 378.-** *Nonlinear tunable vibrational response in hexagonal boron nitride*, F. Iyikanat, A. Konečná, and F. J. García de Abajo, *ACS Nano* **15**, 13415-13426 (2021)
- 377.-** *Giant all-optical modulation of second-harmonic generation mediated by dark excitons*, L. Wang, S. Das, F. Iyikanat, Y. Dai, S. Li, X. Guo, X. Yang, J. Cheng, X. Hu, M. Ghotbi, F. Ye, H. Lipsanen, S. Wu, T. Hasan, X. Gan, K. Liu, D. Sun, Q. Dai, F. J. García de Abajo, J. Zhao, and Z. Sun, *ACS Photonics* **8**, 2320-2328 (2021)

- 376.-** *Theory of atomic-scale vibrational mapping and isotope identification with electron beams*, A. Konečná, F. Iyikanat, and F. J. García de Abajo, *ACS Nano* **15**, 9890-9899 (2021)
- 375.-** *Optical response of noble metal nanostructures: Quantum surface effects in crystallographic facets*, A. Rodríguez Echarri, P. A. D. Gonçalves, C. Tserkezis, F. J. García de Abajo, N. A. Mortensen, and J. D. Cox, *Optica* **8**, 710-721 (2021) [Cover Image]
- 374.-** *Optical coherence transfer mediated by free electrons*, O. Kfir, V. Di Giulio, F. J. García de Abajo, and C. Ropers, *Science Advances* **7**, eabf6380 (2021)
- 373.-** *Modulation of cathodoluminescence emission by interference with external light*, V. Di Giulio, O. Kfir, C. Ropers, and F. J. García de Abajo, *ACS Nano* **15**, 7290-7304 (2021)
- 372.-** *Spontaneous and stimulated electron–photon interactions in nanoscale plasmonic near fields*, M. Liebrau, M. Sivis, A. Feist, H. Lourenço-Martins, N. Pazos-Pérez, R. A. Alvarez-Puebla, F. J. García de Abajo, A. Polman, and C. Ropers, *Light: Science & Applications* **10**, 82 (2021)
- 371.-** *Optical excitations with electron beams: Challenges and opportunities*, F. J. García de Abajo and V. Di Giulio, *ACS Photonics* **8**, 945-974 (2021) [Cover Image]
- 370.-** *Complete coupling of focused light to surface polaritons*, D. J. C. Dias and F. J. García de Abajo, *Optica* **8**, 520-531 (2021)
- 369.-** *Can Copper Nanostructures Sustain High-Quality Plasmons?* V. Mkhitarian, K. March, E. N. Tseng, X. Li, L. Scarabelli, L. M. Liz-Marzán, S.-Y. Chen, L. H. G. Tizei, O. Stéphan, J.-M. Song, M. Kociak, F. J. García de Abajo, and A. Gloter, *Nano Letters* **21**, 2444-2452 (2021)
- 368.-** *Optical modulation of electron beams in free space*, F. J. García de Abajo and A. Konečná, *Physical Review Letters* **126**, 123901 (2021) [Editor's Suggestion]
- 367.-** *Giant enhancement of third-harmonic generation in graphene-metal heterostructures*, I. Alonso Calafell, L. A. Rozema, D. Alcaraz Iranzo, A. Trenti, P. K. Jenke, J. D. Cox, A. Kumar, H. Bieliaiev, S. Nanot, C. Peng, D. K. Efetov, J. Y. Hong, J. Kong, D. Englund, F. J. García de Abajo, F. H. L. Koppens, and P. Walther, *Nature Nanotechnology* **16**, 318-324 (2021)
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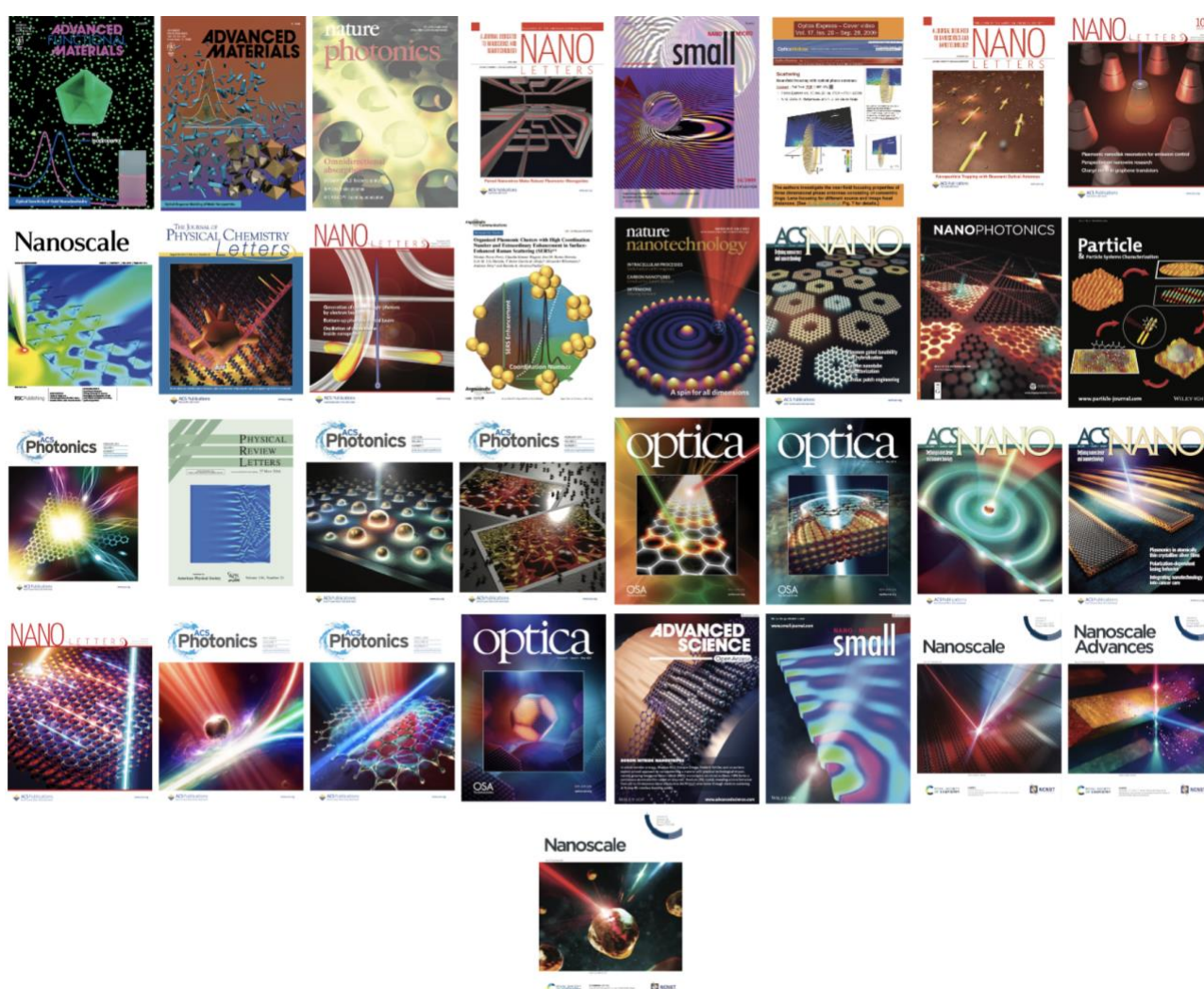
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- 2.- *Toroidal networks for multicomputer systems*, J. Miguel, C. Izu, A. Arruabarrena, F. J. García de Abajo, and R. Beivide, *ISMM International Workshop on Parallel Computing*, Trani, Italy (1991), edited by D. Marino and G. Mastronardi (Acta Press, Anaheim, 1991), pp. 112-116
- 1.- *Campos magnéticos, torsión de hilos y efecto Seebeck: un experimento para el primer ciclo [In Spanish]*, F. J. García de Abajo and M. J. Tello, *Anales de Física B* **1**, 20-23 (1987)

COMENTARIES

- 8.- Comment on “Free-electron-bound-electron resonant interaction”, F. J. García de Abajo, *Physical Review Letters* **126**, 019501 (2021)
- 7.- Special issue “2D materials for nanophotonics”, F. J. García de Abajo, *ACS Photonics* **4**, 2959-2961 (2017)
- 6.- Focus issue on surface plasmon photonics introduction, P. Berini, A. Bouhelier, F. J. García de Abajo, and N. Park, *Optics Express* **21**, 27286-27290 (2013)
- 5.- Graphene nanophotonics, F. J. García de Abajo, *Science* **339**, 917-918 (2013)
- 4.- Plasmons go quantum, F. J. García de Abajo, *Nature* **483**, 417-418 (2012)
- 3.- Photons and electrons team up, F. J. García de Abajo, *Nature* **462**, 861 (2009)
- 2.- Seeing without being seen, F. J. García de Abajo, *Physics* **2**, 47 (2009)
- 1.- Self-assembly works for superlattices, J. E. Ortega and F. J. García de Abajo, *Nature Nanotechnology* **2**, 601-602 (2007)

JOURNAL COVER IMAGES**INVITED TALKS**

- 277.- F. J. García de Abajo, *Quantum photonics with free electrons: Challenges and opportunities*, International Topical Meeting on Nanophotonics and Metamaterials NANOMETA, Seefeld (Austria), January 2024.
- 276.- F. J. García de Abajo, *Nanophotonics with free electrons*, Electron Beam Spectroscopy for Nanophotonics, Antwerp (Belgium), October 2023.
- 275.- F. J. García de Abajo, *Nanophotonics in two-dimensional materials*, International Congress on Artificial Materials for Novel Wave Phenomena – Metamaterials, Crete (Greece), September 2023.

- 274.-** F. J. García de Abajo, *Advances toward zeptosecond electron spectromicroscopy*, CDM30 + FisMat 2023, Milano (California, USA), September 2023.
- 273.-** F. J. García de Abajo, *Plasmons in atomically thin metals*, SPIE Optics+Photonics, Conference on Plasmonics: Design, Materials, Fabrication, Characterization, and Applications XXI, San Diego (California, USA), August 2023. **Keynote.**
- 272.-** F. J. García de Abajo, *Exploring the limits to spatially resolved optical spectroscopy with free electrons*, SPIE Optics+Photonics, Conference on Enhanced Spectroscopies and Nanoimaging, San Diego (California, USA), August 2023. **Keynote.**
- 271.-** F. J. García de Abajo, *Generation of single and entangled-pair polaritons*, SPIE Optics+Photonics, Conference on Quantum Nanophotonic Materials, Devices, and Systems, San Diego (California, USA), August 2023.
- 270.-** F. J. García de Abajo, *Two-dimensional materials for nanophotonics*, SPIE Optics+Photonics, Conference on Metamaterials, Metadevices, and Metasystems, San Diego (California, USA), August 2023.
- 269.-** F. J. García de Abajo, *Two-dimensional materials for nanophotonics*, OMN+SBFoton Conference, Campinas (Brazil), July 2023. **Plenary.**
- 268.-** F. J. García de Abajo, *Free electrons for infrared nanophotonics*, Microscopy & Microanalysis, Minneapolis (Minnesota, USA), July 2023.
- 267.-** F. J. García de Abajo, *Quantum optical phenomena in two-dimensional materials*, META, Paris (France), July 2023. **Keynote.**
- 266.-** F. J. García de Abajo, *Quantum confinement effects in atomic-scale polaritons*, META, Paris (France), July 2023.
- 265.-** F. J. García de Abajo, *Nanophotonics in two-dimensional materials*, PIERS, Prague (Czech Republic), July 2023. **Keynote.**
- 264.-** F. J. García de Abajo, *Free electrons for infrared nanophotonics*, PIERS, Prague (Czech Republic), July 2023.
- 263.-** F. J. García de Abajo, *Two-dimensional materials for polaritonics*, Dinamo 2023, Svolvær (Norway), June 2023.
- 262.-** F. J. García de Abajo, *Quantum optical phenomena in two-dimensional materials*, Surface-Plasmon Photonics SPP10, Houston (Texas, USA), May 2023.
- 261.-** F. J. García de Abajo, *Nanophotonics with free electrons*, NanoSpain, Tarragona (Spain), April 2023. **Keynote.**
- 260.-** F. J. García de Abajo, *An approach towards spatiotemporal electron beam focusing*, 6th Workshop on Applications of Dielectric Laser Accelerators, Stanford University (California, USA), February 2023.
- 259.-** F. J. García de Abajo, *Challenges and opportunities in 2D polaritonics*, Frontiers in Optics + Laser Science 2022 (virtual meeting, Rochester (New York, USA), October 2022.
- 258.-** F. J. García de Abajo, *Quantum optical phenomena in 2D material heterostructures*, WE-Heraeus Foundation Seminar on 2D Materials and Hybrids: Hybrid Quasiparticles in Quantum Materials, Bad Honnef (Germany), September 2022.
- 257.-** F. J. García de Abajo, *Polaritonics with atomically thin materials: Challenges and opportunities*, International Congress on Engineered Material Platforms for Novel Wave Phenomena, Siena (Italy), September 2022.
- 256.-** F. J. García de Abajo, *Photonics with atomically-thin materials*, SPIE Optics+Photonics, Conference on Active Photonic Platforms (APP), San Diego (California, USA), August 2022. **Keynote.**
- 255.-** F. J. García de Abajo, *Solving the in/out-coupling problem in strongly-confined polaritonics*, SPIE Optics+Photonics, Conference on Low-Dimensional Materials and Devices, San Diego (California, USA), August 2022. **Keynote.**
- 254.-** F. J. García de Abajo, *Quantum interactions enable a new generation of low-dimensional materials*, SPIE Optics+Photonics, Conference on Metamaterials, Metadevices, and Metasystems, San Diego (California, USA), August 2022.
- 253.-** F. J. García de Abajo, *Atomically thin polaritonics: Challenges and opportunities*, EPS Symposium on the Third Generation Metamaterials 3.1, Cetraro (Italy), August 2022.
- 252.-** F. J. García de Abajo, *Optical theorems, sum rules, and nanophotonics with point dipoles*, MOLE Conference 2022, San Sebastian (Spain), July 2022.

- 251.-** F. J. García de Abajo, *New directions in the design of atomically thin materials*, International Conference on Metamaterials, Photonic Crystals and Plasmonics META (virtual meeting), Torremolinos (Spain), July 2022. **Keynote.**
- 250.-** F. J. García de Abajo, *Leveraging free-electron wave functions to image and manipulate ultraconfined optical excitations*, AMOLF Summerschool, Amsterdam (The Netherlands), July 2022.
- 247.-** F. J. García de Abajo, *Quantum and classical effects in the interaction of electron beams with optical excitations*, WE-Heraeus Foundation Seminar on Quantum Electron Optics, Nahsholim (Israel), June 2022.
- 248.-** F. J. García de Abajo, *Atomically thin polaritonics: Challenges and opportunities*, NanoPlasm Conference, Cetraro (Italy), June 2022. **Keynote.**
- 247.-** F. J. García de Abajo, *Atomically thin polaritonics: Challenges and opportunities*, Nanophoton Conference: Fundamentals and applications of semiconductor nanocavities, Rungsted Kyst (Denmark), June 2022.
- 246.-** F. J. García de Abajo, *Novel Electromagnetic Effects in Moving Media*, CLEO (virtual meeting), San Jose, California (USA), May 2022.
- 245.-** F. J. García de Abajo, *Quantum Aspects of the Interaction between Free Electron, Light, and Photonic Nanostructures*, PIERS (virtual meeting), Hangzhou (China), April 2022. **Keynote.**
- 244.-** F. J. García de Abajo, *Integration of free electrons in nanophotonics*, 4th International Workshop on Quantum and Topological Nanophotonics, NTU (Singapore), April 2022.
- 243.-** F. J. García de Abajo, *Quantum Aspects of the Interaction between Free Electron, Light, and Photonic Nanostructures*, SPIE Optics + Optoelectronics, Conference on Advances in Ultrafast Condensed Phase Physics III, Strasbourg (France), April 2022.
- 242.-** F. J. García de Abajo, *Quantum and classical effects in the interaction of electron beams with optical excitations*, International Topical Meeting on Nanophotonics and Metamaterials NANOMETA, Seefeld (Austria), March 2022.
- 241.-** F. J. García de Abajo, *Quantum optics with free electrons*, Nanolight, Benasque (Spain), March 2022.
- 240.-** F. J. García de Abajo, *Towards complete optical coupling to localized optical modes*, MRS Fall Meeting, Symposium EQ16: Metasurfaces and Metaplatforms for Infrared (virtual meeting), Boston (Massachusetts, USA), December 2021.
- 239.-** F. J. García de Abajo, *Control of light at the atomic scale: Fundamentals and applications*, ImagineNano, Bilbao (Spain), November 2021. **Keynote.**
- 238.-** F. J. García de Abajo, *Complete coupling of light to ultra- confined optical modes using dielectric resonators*, METANANO 2021 (virtual meeting) (ITMO, Russia), September 2021. **Keynote.**
- 237.-** F. J. García de Abajo, *Optical excitations with electron beams: Challenges and opportunities*, METANANO 2021 (virtual meeting) (ITMO, Russia), September 2021.
- 236.-** F. J. García de Abajo, *Quantum interactions between free electrons and metamaterials*, SPIE Optics+Photonics (virtual meeting), San Diego (California, USA), August 2021.
- 235.-** F. J. García de Abajo, *Nanophotonics with two-dimensional materials*, 11th International Conference on Metamaterials META 2021 (virtual meeting), Warsaw (Poland), July 2021. **Keynote.**
- 234.-** F. J. García de Abajo, *Two-dimensional materials for the control of light at the nanoscale*, Optical Society of America Advanced Photonics Congress Summer School (virtual meeting) (Canada), July 2021.
- 233.-** F. J. García de Abajo, *Quantum interactions between free electrons and metamaterials*, METANANO Summer School on Photonics 2D Materials (virtual meeting) (ITMO, Russia), July 2021.
- 232.-** F. J. García de Abajo, *Control of light at the atomic scale*, Electromagnetic and Light Scattering Conference Online (ELS-XIX) (Russia), July 2021.
- 231.-** F. J. García de Abajo, *Control of light at the atomic scale*, Photonics Ireland Conference (virtual meeting), Dublin (Ireland), June 2021.
- 230.-** F. J. García de Abajo, *Quantum interactions between free electrons and optical excitations*, Spintronics Photonics Phononics Magneto-Optics (SPPM) Online International Conference (Spain), June 2021. **Keynote.**
- 229.-** F. J. García de Abajo, *Luz y electrones en la exploración de nuevos materiales*, Cátedra Julio Palacios, Fundación Areces (virtual meeting) (Spain), April 2021.
- 228.-** F. J. García de Abajo, *Optical excitations with free electrons: Challenges and opportunities*, Electrons, Photons and Plasmons (virtual meeting), Lausanne (Switzerland), March 2021.

- 227.- F. J. García de Abajo, *Control of light at the atomic scale: Fundamentals and applications*, ImagineNano (virtual meeting), Bilbao (Spain), September 2020. **Keynote**.
- 226.- F. J. García de Abajo, *Control of light at the atomic scale: Fundamentals and applications*, Metamaterials (virtual meeting), New York (USA), September 2020.
- 225.- F. J. García de Abajo, *Probing and generation of high harmonics with electron beams*, CMD2020GEFES (virtual meeting) (Spain), August 2020.
- 224.- F. J. García de Abajo, *Quantum aspects of electron-light-plasmons interactions at the atomic scale*, Microscopy & Microanalysis (virtual meeting), Milwaukee (Wisconsin, USA), August 2020.
- 223.- F. J. García de Abajo, *Quantum effects in the interaction between free-electrons and optical near fields*, Nanolight, Benasque (Spain), March 2020.
- 222.- F. J. García de Abajo, *Quantum aspects of electron-light-plasmons interactions at the atomic scale*, 3rd Workshop on Theoretical and Numerical Tools for Nanophotonics TNTN, Berlin (Germany), February 2020.
- 221.- F. J. García de Abajo, *Quantum aspects of free-electron interactions with nanophotonic structures*, 3rd International Workshop on Quantum and Topological Nanophotonics, NTU (Singapore), December 2019.
- 220.- F. J. García de Abajo, *Control of light at the atomic scale: Fundamentals and applications*, 15th Nanoscience and Nanotechnology Conference NANOTR-15, Antalya (Turkey), November 2019. **Plenary**.
- 219.- F. J. García de Abajo, *Plasmonics in two-dimensional crystals*, SPIE Photonics Asia, Conference 10028, Hangzhou (China), October 2019. **Keynote**.
- 218.- F. J. García de Abajo, *Quantum aspects of the interaction between beam electrons and optical near fields*, Time Domain Control of Atomic Shell for Nuclear Excitation, Lerici (Italy), October 2019.
- 217.- F. J. García de Abajo, *Control of light at the atomic scale*, Trends in Nanotechnology TNT, San Sebastian (Spain), October 2019. **Keynote**.
- 216.- F. J. García de Abajo, *Fundamental concepts, applications, and current topics in plasmonics*, HICONO, Barcelona (Spain), September 2019.
- 215.- F. J. García de Abajo, *Quantum aspects of the interaction between beam electrons and optical near fields*, HICONO, Barcelona (Spain), September 2019. **Invited Tutorial**
- 214.- F. J. García de Abajo, *Plasmonics in two dimensional crystals*, International School and Workshop on 2D Crystals and Photonics, Tbilisi (Georgia), September 2019.
- 213.- F. J. García de Abajo, *Control of light at the atomic scale: Fundamentals and Applications*, Days of Optics & Photonics, Karlsruhe (Germany), September 2019.
- 212.- F. J. García de Abajo, *Plasmonics in two-dimensional crystals*, SPIE Optics+Photonics, San Diego (California, USA), August 2019. **Keynote**.
- 211.- F. J. García de Abajo and E. J. C. Dias, *Complete coupling from a single photon to an ultraconfined plasmon*, SPIE Optics+Photonics, San Diego (California, USA), August 2019.
- 210.- F. J. García de Abajo, *Optimizing the coupling between electron beams and optical fields*, StEM Workshop, Ringberg Castell, Tegernsee Lake (Germany), July 2019.
- 209.- F. J. García de Abajo, *Quantum aspects of the interaction between beam electrons and optical near fields*, Q-SORT, Erlangen (Germany), July 2019. **Keynote**.
- 208.- F. J. García de Abajo, *Ultrafast plasmonics at the atomic scale*, International Conference on Materials and Advanced Technologies ICMAT 2019, Symposium RR, Singapore, June 2019.
- 207.- F. J. García de Abajo, *Two-dimensional plasmonics in atomically thin materials*, International Conference on Materials and Advanced Technologies ICMAT 2019, Symposium D, Singapore, June 2019. **Keynote**.
- 206.- F. J. García de Abajo, *Plasmonics in two-dimensional crystals*, Progress in Electromagnetic Research Symposium Progress in Electromagnetics Research Symposium (PIERS), Rome (Italy), June 2019. **Keynote**.
- 205.- F. J. García de Abajo, *Analog computing with physical probes*, International Work-Conference on Artificial Neural Networks, Gran Canaria (Spain), June 2019.
- 204.- F. J. García de Abajo, *Plasmonics in atomically-thin materials*, Ultrafast Surface Dynamics USD11, Qiandao Lake (China), June 2019.
- 203.- F. J. García de Abajo, *Plasmonics in two-dimensional crystals*, Surface Plasmon Photonics SPP9, Copenhagen (Denmark), May 2019.

- 202.-** F. J. García de Abajo, *Controlling free-electron wave functions with nanostructured optical fields*, 5th Conference on Frontiers of Aberration Corrected Electron Microscopy, Kasteel Vaalsbroek (The Netherlands), May 2019.
- 201.-** F. J. García de Abajo, *Plasmonics in two-dimensional crystals*, CLEO, San Jose (California, USA), May 2019. **Invited Tutorial**.
- 200.-** F. J. García de Abajo, *2D polaritonics: fundamental limits and prospects for applications*, SPIE Optics + Optoelectronics, Conference on Integrated Optics, Prague (Czech Republic), April 2019.
- 199.-** F. J. García de Abajo, *Plasmonics in atomically thin materials*, Ultrafast Quantum Phenomena on the Nanoscale, Bad Honnef (Germany), March 2019.
- 198.-** F. J. García de Abajo, *Controlling light at the atomic scale with 2D polaritons*, 46th Conference on the Physics and Chemistry of Surfaces and Interfaces (PCSI-46), Santa Fe (New Mexico, USA), January 2019.
- 197.-** F. J. García de Abajo, *2D plasmonics in atomically thin materials*, PQE, Snowbird (Utah, USA), January 2019.
- 196.-** F. J. García de Abajo, *Control of light at the atomic scale: fundamentals and applications*, International Topical Meeting on Nanophotonics and Metamaterials NANOMETA, Seefeld (Austria), January 2019. **Plenary**.
- 195.-** F. J. García de Abajo, *Steering the wave function of free electrons with light*, Frontiers in Quantum Control of Free-Space Electrons, Sausalito (CA, USA), November 2018.
- 194.-** F. J. García de Abajo, *Collective optical excitations in 2D materials*, Optical Scanning Probe Microscopy of Quantum Materials, Harvard University, Cambridge (MA, USA), October 2018.
- 193.-** F. J. García de Abajo, *Graphene plasmonics*, Nanophotonics and Micro/Nano Optics International Conference (NANOP), Rome (Italy), October 2018. **Plenary**.
- 192.-** F. J. García de Abajo, *Graphene plasmonics*, Spanish Conference on Nanophotonics, San Sebastian (Spain), October 2018. **Keynote**.
- 191.-** F. J. García de Abajo, *Quantum physics with plasmons in graphene and other atomic-scale systems*, METANANO, Sochi (Russia), September 2018. **Plenary**.
- 190.-** F. J. García de Abajo, *Controlling light at the atomic scale*, Near-Field Optics, Troyes (France), August 2018. **Plenary**.
- 189.-** F. J. García de Abajo, *Materials based on graphene and other atomic-scale systems*, SPIE Optics+Photonics, San Diego (California, USA), August 2018.
- 188.-** F. J. García de Abajo, *Toward atomic-scale metamaterials*, International Multidisciplinary Conference on Optofluidics (IMCO), Shanghai (China), August 2018. **Keynote**.
- 187.-** F. J. García de Abajo, *Quantum physics with plasmons in graphene and other atomic-scale systems*, Progress in Electromagnetic Research Symposium Progress in Electromagnetics Research Symposium (PIERS), Toyama (Japan), August 2018. **Keynote**.
- 186.-** F. J. García de Abajo, *Quantum aspects of plasmons in graphene and other atomic-scale systems*, International Conference on Low-Energy Electromagnetics in Solids (LEES), Portonovo (Italy), June 2018.
- 185.-** F. J. García de Abajo, *Quantum physics with plasmons in atomic-scale systems*, International Symposium on Plasmonics and Nanophotonics iSPN, Hangzhou (China), May 2018. **Keynote**.
- 184.-** F. J. García de Abajo, *Ultrafast processes triggered by plasmon fluctuations*, Workshop on Fluctuation-Induced Phenomena in Complex Systems, Bad Honnef (Germany), May 2018.
- 183.-** F. J. García de Abajo, *Collective optical modes at the atomic scale*, Spanish Network for 2D Metamaterials, Madrid (Spain), April 2018.
- 182.-** F. J. García de Abajo, *Quantum physics with plasmons in graphene and other atomic-scale systems*, XXVI International Workshop on Optical Wave & Waveguide Theory and Numerical Modelling, Bad Sassendorf (Germany), April 2018.
- 180.-** F. J. García de Abajo, *Fundamentals and applications of atomic-scale optical excitations*, Nanolight, Benasque (Spain), March 2018.
- 179.-** F. J. García de Abajo, *Plasmons at the atomic scale*, MRS Fall Meeting, Symposium EM3: Novel Materials and Architectures for Plasmonics, Boston (Massachusetts, USA), November 2017.
- 178.-** F. J. García de Abajo, *Controlling Light at the Atomic Scale*, COMP Seminar, Aalto University, Helsinki (Finland), September 2017.

- 177.- F. J. García de Abajo, *Theoretical description of the interaction between electron beams and plasmonic nanostructures*, 16th International Conference on the Frontiers of Electron Microscopy in Materials Science FEMMS, Johannesburg (South Africa), September 2017.
- 176.- F. J. García de Abajo, *Graphene plasmonics*, Summer School on Plasmonics SSOP4, Porquerolles (France), September 2017.
- 175.- F. J. García de Abajo, *Ultrafast and quantum phenomena with graphene plasmons*, Metamaterials, Marseille (France), August 2017.
- 174.- F. J. García de Abajo, *Ultrafast plasmonic processes in atomically thin materials*, Quantum Nanophotonics, Monte Verità (Switzerland), August 2017.
- 173.- F. J. García de Abajo, *Controlling light at the atomic scale*, SPIE Optics+Photonics, San Diego, (California, USA), August 2017. **Plenary**.
- 172.- F. J. García de Abajo, *Quantum phenomena with graphene plasmons*, SPIE Optics+Photonics, San Diego, (California, USA), August 2017.
- 171.- F. J. García de Abajo, *Ultrafast phenomena in 2D materials*, Nanophotonics of 2D Materials and Devices, San Sebastian (Spain), August 2017.
- 170.- F. J. García de Abajo, *Plasmons in atomic-scale structures*, International Conference on Transparent Optical Networks (ICTON), Girona (Spain), July 2017.
- 169.- F. J. García de Abajo, *2-hour tutorial on Plasmonics and Graphene Nanophotonics*, Graphene Study, Gothenburg (Sweden), June 2017.
- 168.- F. J. García de Abajo, *Plasmonics with atomically thin materials*, CLEO Europe 2017, Munich (Germany), June 2017. **Invited Tutorial**.
- 167.- F. J. García de Abajo, *Intrinsic and extrinsic quantum phenomena with atomically thin structures*, International Conference on Materials and Advanced Technologies ICMAT 2017, Symposium W, Singapore, June 2017. **Keynote**.
- 166.- F. J. García de Abajo, *Ultrafast and quantum phenomena with graphene*, Electron Microscopy with High Temporal Resolution (EMTHR), Strasbourg (France), May 2017.
- 165.- F. J. García de Abajo, *Ultrafast and quantum phenomena with graphene*, Progress in Electromagnetics Research Symposium (PIERS), St. Petersburg (Russia), May 2017. **Keynote**.
- 164.- F. J. García de Abajo, *Plasmon resonances at the atomic scale: from 2D materials to small molecules*, IEEE NEMO International Conference, Seville (Spain), May 2017. **Plenary**.
- 163.- F. J. García de Abajo, *Ultrafast and quantum optical processes in atomically thin materials*, APS March Meeting, New Orleans (MS, USA), March 2017. **Invited Tutorial**.
- 162.- F. J. García de Abajo, *Ultrafast plasmonic processes in atomically thin materials*, International Workshop on Emerging Applications of Optical Nanostructures, Tel Aviv (Israel), February 2017.
- 161.- F. J. García de Abajo, *Challenges and opportunities in deep-subwavelength nanoplasmonics*, PQE, Snowbird (Utah, USA), January 2017.
- 160.- F. J. García de Abajo, *Ultrafast nanophotonic phenomena using graphene*, International Topical Meeting on Nanophotonics and Metamaterials NANOMETA, Seefeld (Austria), January 2017.
- 159.- F. J. García de Abajo, *Quantum phenomena in graphene*, 1st International Workshop on Quantum and Topological Nanophotonics QTN, Singapore, December 2016.
- 158.- F. J. García de Abajo, *Ultrafast nanophotonic phenomena in nanographenes*, International Workshop on Atomic Physics 2016, Dresden (Germany), November 2016.
- 157.- F. J. García de Abajo, *Exploiting electron-light interaction in electron microscopy and spectroscopy*, Workshop on Scientific Directions for Future Transmission Electron Microscopy, Jülich (Germany), October 2016.
- 156.- F. J. García de Abajo, *Quantum optics with graphene plasmons*, SPIE Photonics Asia, Conference 10028, Beijing (China), October 2016.
- 155.- F. J. García de Abajo, *Recent advances in graphene nanophotonics*, Nanoscience and Nanotechnology N&N 2016, Frascati (Italy), September 2016.
- 154.- F. J. García de Abajo, *Nanophotonics at the atomic scale*, Workshop on Quantum Materials and Quantum Technologies, Braga (Portugal), September 2016.
- 153.- F. J. García de Abajo, *Graphene plasmons, quantum emitters, and light modulation at the nanoscale*, Quantum Theory of Nanoparticle Plasmons QTNP, Berlin (Germany), September 2016.

- 152.-** F. J. García de Abajo, *Quantum optics with graphene plasmons*, SPIE Optics+Photonics, Conference 9918, San Diego (USA), August 2016. **Keynote.**
- 151.-** F. J. García de Abajo, *Recent advances in graphene nanophotonics*, Quantum Plasmonics Workshop QUPLA, London (UK), August 2016.
- 150.-** F. J. García de Abajo, *Graphene nanophotonics*, Progress in Electromagnetic Research Symposium Progress in Electromagnetics Research Symposium (PIERS), Shanghai (China), August 2016. **Keynote.**
- 149.-** F. J. García de Abajo, *Graphene nanophotonics*, International Symposium on Photonic and Electromagnetic Crystal Structures PECS XII, York (UK), July 2016.
- 148.-** F. J. García de Abajo, *Nanophotonics in 2D and atomic-scale materials*, 7th International Conference on Metamaterials META'16, Málaga (Spain), July 2016. **Keynote.**
- 147.-** F. J. García de Abajo, *Photonless 2D plasmonics*, Gordon Research Conference on Plasmonics, Sunday River (Maine, USA), July 2016.
- 146.-** F. J. García de Abajo, *Quantum plasmonics with electron beams*, Journées de spectroscopie de pertes d'énergie des électrons (JEELS), Tarragona (Spain), June 2016.
- 145.-** F. J. García de Abajo, *Graphene nanophotonics*, Sping Workshop on Ultrafast Phenomena at Nanostructures, Les Houches (France), May 2016.
- 144.-** F. J. García de Abajo, *Sensing with graphene and atomic-scale materials*, Nanoscience with Nanocrystals NaNaX 7, Marburg (Germany), April 2016.
- 143.-** F. J. García de Abajo, *Graphene nanophotonics*, Frontiers of Plasmonics FoP 4, Hefei (China), April 2016.
- 142.-** F. J. García de Abajo, *Graphene metamaterials*, Open Readings 2016, OSA Student Chapter, Vilnius (Lithuania), March 2016.
- 141.-** F. J. García de Abajo, *Plasmons in atomic-scale systems*, Nanolight, Benasque (Spain), March 2016.
- 140.-** F. J. García de Abajo, *Quantum plasmonics with free electrons*, APS March Meeting, American Physical Society, Baltimore (Maryland, USA), March 2016.
- 139.-** F. J. García de Abajo, *Quantum plasmonics with free electrons*, Imaging with Femtosecond Electron and X-ray Pulses IFEXS, Trieste (Italy), February 2016.
- 138.-** F. J. García de Abajo, *Graphene nanophotonics*, MRS Fall Meeting, Symposium HH: Optical Metamaterials, Boston (Massachusetts, USA), December 2015.
- 137.-** F. J. García de Abajo, *Graphene photonics*, EPFL Photonics Day, Lausanne (Switzerland), November 2015.
- 136.-** F. J. García de Abajo, *Graphene photonics*, Inaugural Workshop for Purdue Quantum Center, Purdue (Indiana, USA), October 2015.
- 135.-** F. J. García de Abajo, *Graphene plasmonics*, 4th International Workshop on Ultrafast Nanooptics UNO-4, Bad Dürkheim (Germany), October 2015.
- 134.-** F. J. García de Abajo, *Graphene nanophotonics*, Advances in Optoelectronics and Micro/nano-optics AOM2015, Hangzhou (China), October 2015. **Keynote.**
- 133.-** F. J. García de Abajo, *Pushing nanophotonics down to the atomic scale*, Optical Technical for Society, British Council-CSIC, Madrid (Spain), October 2015. **Keynote.**
- 132.-** F. J. García de Abajo, *Plasmons in nanographene and other atomic scale systems*, Nanoscale Assemblies of Semiconductor Nanocrystals NANOSA15, Dresden (Germany), August 2015.
- 131.-** F. J. García de Abajo, *Plasmonics: An overview and some new trends (2 lectures)*, Complex Photonics, International School of Physics "Enrico Fermi", Varenna (Italy), July 2015.
- 130.-** F. J. García de Abajo, *Plasmons in graphene and other atomic-scale structures*, International Conference on Materials and Advanced Technologies ICMAT 2015, Symposium K, Singapore, July 2015. **Keynote.**
- 129.-** F. J. García de Abajo, *Modulation of tunable plasmons and their applications*, International Conference on Materials and Advanced Technologies ICMAT 2015, Symposium F, Singapore, July 2015.
- 128.-** F. J. García de Abajo, *Graphene Nanophotonics*, Progress in Electromagnetic Research Symposium Progress in Electromagnetics Research Symposium (PIERS), Symposium F, Prague (Czech Republic), July 2015. **Keynote.**
- 127.-** F. J. García de Abajo, *Graphene nanophotonics*, CLEO Europe, Munich (Germany), June 2015.

- 126.-** F. J. García de Abajo, *Optical sensing and light modulation with atomic scale systems*, Surface Plasmon Photonics SPP7, Jerusalem (Israel), June 2015.
- 125.-** F. J. García de Abajo, *Electron beam decoherence produced by thermal fluctuations*, MRS Spring Meeting, Symposium ZZ: Materials Information with Electron Microscopy, San Francisco (California, USA), April 2015.
- 124.-** F. J. García de Abajo, *Graphene nanophotonics*, 1st International Conference of ICQP, Wuhan (China), March 2015.
- 123.-** F. J. García de Abajo, *Plasmons in graphene and other atomic scale systems*, ImagineNano, Bilbao (Spain), March 2015. **Keynote.**
- 122.-** F. J. García de Abajo, *Plasmons in graphene and other atomic scale systems*, International Winterschool on Electronic Properties of Novel Materials IWEPNM, Kichberg in Tirol (Austria), March 2015.
- 121.-** F. J. García de Abajo, *Inelastic effects on the lateral wave function of electron beams*, Deutsche Physikalische Gesellschaft (DPG), Symposium on Interactions between Twisted Light and Particles, Heidelberg (Germany), March 2015.
- 120.-** F. J. García de Abajo, *Electromagnetic simulations for plasmonics*, Electromagnetic and Light Scattering ELS XV, Leipzig (Germany), June 2015. **Review talk.**
- 119.-** F. J. García de Abajo, *Plasmons in nanographene and other atomic scale systems (2 lectures)*, WinsCool, EPFL-ETH School, Champéry (Switzerland), March 2015.
- 118.-** F. J. García de Abajo, *Plasmons in atomic-scale structures*, Faraday Discussion 178, London (UK), February 2015.
- 117.-** F. J. García de Abajo, *The limits of field enhancement in nanoplasmonic optical sensing*, SPIE Photonics West, Conference 9338, San Francisco (California, USA), February 2015.
- 116.-** F. J. García de Abajo, *Ultrafast plasmon dynamics in graphene*, SPIE Photonics West, Conference 9363, San Francisco (California, USA), February 2015.
- 115.-** F. J. García de Abajo, *Extreme plasmonics in atomic-scale structures*, International Topical Meeting on Nanophotonics and Metamaterials NANOMETA, Seefeld (Austria), January 2015.
- 114.-** F. J. García de Abajo, *Controlling the optical near field with atomic-scale structures*, MRS Fall Meeting, Symposium L: Optical Metamaterials, Boston (Massachusetts, USA), December 2014.
- 113.-** F. J. García de Abajo, *Plasmons in atomically thin materials*, SPIE Photonics Asia, Conference 9278, Beijing (China), October 2014.
- 112.-** F. J. García de Abajo, *Extreme plasmonics in atomically thin materials*, 30th Panhellenic Conference on Solid-State Physics and Materials Science, Heraklion (Crete), September 2014. **Plenary.**
- 111.-** F. J. García de Abajo, *Extreme plasmonics in atomic-scale materials*, EOSAM - TOM 5, Berlin (Germany), September 2014.
- 110.-** F. J. García de Abajo, *Optical modes in atomically thin materials*, European Conference on Surface Science 30, Antalya (Turkey), August 2014. **Keynote.**
- 109.-** F. J. García de Abajo, *Advances in graphene metamaterials*, Metamaterials, Copenhagen (Denmark), August 2014. **Plenary.**
- 108.-** F. J. García de Abajo, *Extreme plasmonics in atomically thin materials*, SPIE Optics+Photonics, Conference 9160, San Diego (USA), August 2014. **Keynote.**
- 107.-** F. J. García de Abajo, *Quantum aspects of the interaction between fast electrons and plasmons*, Condensed Matter in Paris, Paris (France), August 2014.
- 106.-** F. J. García de Abajo, *Extreme plasmonics in atomic-scale materials*, XXIII International Materials Research Congress, Cancún (Mexico), August 2014.
- 105.-** F. J. García de Abajo, *Intensity and coherence in electron microscopy*, Holography Workshop, Dresden (Germany), June 2014.
- 104.-** F. J. García de Abajo, *Extreme plasmonics in atomically thin materials*, Days on Diffraction, St. Petersburg (Russia), May 2014. **Plenary.**
- 103.-** F. J. García de Abajo, *Extreme plasmonics in atomically thin materials*, International Symposium on Photonic and Electromagnetic Crystal Structures PECS XI, Shanghai (China), May 2014.
- 102.-** F. J. García de Abajo, *Extreme plasmonics in atomically thin materials*, Conferencia Española de Nanofotónica, Santander (Spain), May 2014. **Keynote.**

- 101.-** F. J. García de Abajo, *Plasmons in low dimensional structures*, Workshop on Optical Plasmonic Materials, Belin (Germany), March 2014.
- 100.-** F. J. García de Abajo, *Plasmons in low-dimensional structures*, Nanolight, Benasque (Spain), March 2014.
- 99.-** F. J. García de Abajo, *Vacuum and thermal friction in rotating particles*, PQE, Snowbird, Utah (USA), January 2014.
- 98.-** F. J. García de Abajo, *Plasmons in low dimensional structures*, QSS-Asia, Tokyo (Japan), November 2013. **Plenary.**
- 97.-** F. J. García de Abajo, *Plasmon excitations in nanostructured graphene and graphene-related molecules*, ISNTT, Atsugi (Japan), November 2013.
- 96.-** F. J. García de Abajo, *Graphene plasmonics: Challenges and Opportunities*, ACSIN-12, Tsukuba (Japan), November 2013.
- 95.-** F. J. García de Abajo, *Plasmons in low dimensional structures*, MediNano, Lyon (France), October 2013.
- 94.-** F. J. García de Abajo, *Graphene plasmonics and graphene-based metamaterials*, Metamaterials, Bordeaux (France), September 2013. **Keynote.**
- 93.-** F. J. García de Abajo, *Graphene plasmonics*, HIOS-YRW, Brandersburg (Germany), September 2013.
- 92.-** F. J. García de Abajo, *Graphene metamaterials*, Optics+Photonics, Conference 8806, San Diego, California (USA), August 2013.
- 91.-** F. J. García de Abajo, *Classical and quantum effects in graphene plasmonics*, Optics+Photonics, Conference 8809, San Diego, California (USA), August 2013. **Keynote.**
- 90.-** F. J. García de Abajo, *Plasmons in graphene and graphene-based molecules*, 3rd International Workshop on Ultrafast Nanooptics UNO-3, Bad Dürkheim (Germany), June 2013.
- 89.-** F. J. García de Abajo, *Plasmons in low-dimensional structures*, ICONO-13, Moscow (Russia), June 2013.
- 88.-** F. J. García de Abajo, *Current trends in graphene plasmonics*, FLAMN-13, St. Petersburg (Russia), June 2013.
- 87.-** F. J. García de Abajo, *Graphene plasmonics*, CLEO, San Jose, California (USA), June 2013.
- 86.-** F. J. García de Abajo, *Interaction of fast electrons with nanomaterials*, International Electron Energy Loss Spectroscopy Meeting on Enhanced Data Generated by Electrons EDGE 2013, St. Maxime (France), May 2013.
- 85.-** F. J. García de Abajo, *Graphene plasmonics*, Extreme Photonics & Quantum Photonics Summer School, Ottawa (Canada), May 2013.
- 84.-** F. J. García de Abajo, *Plasmons in low-dimensional structures*, NanoWal, Wallonia Network for Nanotechnology, Namur (Belgium), April 2013.
- 83.-** F. J. García de Abajo, *Control de la luz a escalas nanométricas*, Materials Week, Madrid (Spain), April 2013. Opening conference.
- 82.-** F. J. García de Abajo, *Quantum effects in graphene plasmons*, Optical Fiber Communication Conference and Exposition (OFC/NFOEC), Anaheim (California, USA), March 2013.
- 81.-** F. J. García de Abajo, *Classical and quantum effects in graphene plasmonics*, Graphene Nanophotonics, Benasque (Spain), March 2013.
- 80.-** F. J. García de Abajo, *Graphene Plasmonics*, International Topical Meeting on Nanophotonics and Metamaterials NANOMETA, Seefeld (Austria), January 2013.
- 79.-** F. J. García de Abajo, *Graphene plasmonics*, Dwek School on Nanophotonics, Weizmann Inst. of Science (Israel), December 2012. **Keynote.**
- 78.-** F. J. García de Abajo, *Electron energy-loss spectroscopy*, Dwek School on Nanophotonics, Weizmann Inst. of Science (Israel), December 2012.
- 77.-** F. J. García de Abajo, *Graphene plasmonics*, Metallic Nano-Objects: From Fundamentals to Applications, Saint Etienne (France), November 2012. **Plenary.**
- 76.-** F. J. García de Abajo, *Control of light with graphene plasmons*, Croucher Advanced Study Institute on New Materials and New Concepts for Controlling Light and Waves, Hong Kong, October 2012. **Keynote.**
- 75.-** F. J. García de Abajo, *Graphene plasmonics*, Trends in Nanotechnology TNT 2012, Madrid (Spain), September 2012.

- 74.-** F. J. García de Abajo, *Graphene plasmonics: An atomically thin look into*, Near Field Optics NFO 2012, San Sebastián (Spain), September 2012.
- 73.-** F. J. García de Abajo, *Graphene plasmonics*, Microchip Plasmonics, Erlangen (Germany), August 2012.
- 72.-** F. J. García de Abajo and V. Myroshnychenko *Probing metal nanoparticles via cathodoluminescence, electron energy-loss, and optical spectroscopies*, SPIE Optics+Photonics, Conference 8463, San Diego (California, USA), August 2012.
- 71.-** F. J. García de Abajo, S. Thongrattanasiri, A. Manjavacas, and J. Christensen, *Graphene plasmonics: From quantum phenomena to extraordinary nanooptics*, SPIE Optics+Photonics, Conference 8457, San Diego (California, USA), August 2012. **Keynote**.
- 70.-** S. Thongrattanasiri, F. H. L. Koppens, and F. J. García de Abajo, *Complete absorption in graphene mematerials*, SPIE Optics+Photonics, Conference 8455, San Diego (California, USA), August 2012.
- 69.-** F. J. García de Abajo, *New trends in graphene plasmonics*, Carbonhagen, Copenague (Denmark), June 2012.
- 68.-** F. J. García de Abajo, *New spectral microscopies based upon plasmon-ebeam interaction*, Gordon Research Conference on Plasmonics, Waterville (Maine, USA), June 2012.
- 67.-** F. J. García de Abajo, *Nanoparticle plasmonics*, Nanoscience with Nanocrystals NaNaX 5, Fuengirola (Spain), May 2012.
- 66.-** F. J. García de Abajo, *Complete absorption in graphene*, Frontiers of Plasmonics FoP 2, Chengdu (China), April 2012.
- 65.-** F. J. García de Abajo, *Graphene plasmonics*, Nanolight, Benasque (Spain), March 2012.
(Period of inactivity due to chemotherapy treatment: Oct. 2011 to Feb. 2012.)
- 64.-** F. J. García de Abajo, *Plasmonics: Achievements, trends, and challenges*, Biannual meeting of the Spanish Royal Society of Physics (RSEF), Santander (Spain), September 2011.
- 63.-** F. J. García de Abajo, *Graphene, electrons, plasmons, and quantum: A perfect match*, XXII Congress of the International Union of Crystallography IUC, Madrid (Spain), August 2011.
- 62.-** F. J. García de Abajo, *Quantum aspects of the interaction between plasmons and electron beams*, Current Topics in TEM, Ringberg Castell, Tegernsee Lake (Germany), June 2011.
- 61.-** F. J. García de Abajo, *Graphene plasmonics*, ICMAT, Singapore, June 2011.
- 60.-** F. J. García de Abajo, *Quantum aspects of the interaction between plasmons and electron beams*, Nanoplasmonics, Vigo (Spain), June 2011.
- 59.-** F. J. García de Abajo, *Quantum aspects of the interaction between plasmons and electron beams*, Surface Plasmon Photonics SPP5, Busan (Korea), May 2011.
- 58.-** F. J. García de Abajo, *Quantum aspects of electron-plasmon interaction*, International Topical Meeting on Nanophotonics and Metamaterials NANOMETA, Seefeld (Austria), January 2011.
- 57.-** F. J. García de Abajo, *Combined use of photons and electrons for spaced-resolved spectroscopy*, MORE, Vienna (Austria), November 2010.
- 56.-** F. J. García de Abajo, *Probing and generating localized optical excitations with fast electrons*, Mediterranean Conference on Nanophotonics MediNano-3, Belgrade (Serbia), October 2010.
- 55.-** F. J. García de Abajo, *Photons and electrons team up*, Passion for Knowledge – Photonics, San Sebastian (Spain), September 2010.
- 54.-** F. J. García de Abajo, *Photons and electrons team up*, International Symposium on Photonic and Electromagnetic Crystal Structures PECS IX, Granada (Spain), September 2010.
- 53.-** F. J. García de Abajo, *Studying localized excitations with fast electrons*, Metamaterials'2010, Karlsruhe (Germany), September 2010.
- 52.-** F. J. García de Abajo, *Localized surface plasmons*, iNANO Graduate Summer School in Advanced Photonics, Aarhus (Denmark), September 2010.
- 51.-** F. J. García de Abajo, *Plasmonics in metallic nanoparticles & Advanced nanophotonics using fast electrons (2 lectures)*, Advances on Nanophotonics III: Plasmonics and Energy Efficiency, Erice (Italy), July 2010.
- 50.-** F. J. García de Abajo, *Quantum aspects of electron-plasmon interaction*, Gordon Research Conference – Plasmonics, Waterville (New Hampshire, USA), June 2010.
- 49.-** F. J. García de Abajo, *Plasmon generation by swift electrons*, MRS Spring Meeting, Symposium EE: Materials for Nanophotonics, San Francisco (California, USA), April 2010.

(*Period of inactivity due to chemotherapy treatment: May 2009 to Feb. 2010.*)

- 48.- F. J. García de Abajo, *Non-local effects in strongly-interacting plasmons*, MRS Spring Meeting, Symposium EE: Materials for Nanophotonics, San Francisco (California, USA), April 2009.
- 47.- F. J. García de Abajo, *Plasmons in periodic metallic structures*, International Symposium on Photonic and Electromagnetic Crystal Structures PECS VIII, The 8th International Photonic & Electromagnetic Crystal Structures Meeting, Sydney (Australia), April 2009.
- 46.- F. J. García de Abajo and R. Sainidou, *Plasmon guided modes and nonlocal effects in closely-spaced nanoparticle metamaterials*, International Topical Meeting on Nanophotonics and Metamaterials NANOMETA 2009, Seefeld (Austria), January 2009.
- 45.- F. J. García de Abajo, *Simulating plasmons in nanostructured materials*, International Workshop on Theoretical and Computational Nano-Photonics (TACONA), Physikzentrum Bad Honnef (Germany), December 2008.
- 44.- F. J. García de Abajo, *Plasmons in metallic nanoparticles*, Meeting on Optical Response in Extended Systems (MORE), Vienna (Austria), November 2008.
- 43.- F. J. García de Abajo, *Understanding localized plasmons in nanostructured materials*, International Workshop on Metamaterials and Plasmonics (IWNP), Shanghai (China), November 2008.
- 42.- F. J. García de Abajo, *Non-local effects in strongly-interacting plasmons*, Metamaterials'2008, Pamplona (Spain), September 2008.
- 41.- A. G. Curto and F. J. García de Abajo, *Near-field optical phase antennas for long-range Plasmon coupling*, SPIE Optics+Photonics, Conference 7033, San Diego (California, USA), August 2008.
- 40.- F. J. García de Abajo and M. Kociak, *Probing the plasmonic local density of states with electron energy loss spectroscopy*, SPIE Optics+Photonics, Conference 7033, San Diego (California, USA), August 2008.
- 39.- F. J. García de Abajo, *Non-local effects in the plasmons of strongly interacting nanoparticles, dimers, and waveguides*, SPIE Optics+Photonics, Conference 7032, San Diego (California, USA), August 2008.
- 38.- F. J. García de Abajo, A. G. Curto, A. Manjavacas, M. R. Dennis and N. I. Zheludev, *Tailoring the near-field through scatterer arrays: Talbot effect, near-field antennas, and related phenomena*, SPIE Optics+Photonics, Conference 7029, San Diego (California, USA), August 2008. **Keynote**.
- 37.- F. J. García de Abajo, *Plasmons in metallic nanoparticles*, Ultrafast Nanooptics, Physikzentrum Bad Honnef (Germany), June 2008.
- 36.- F. J. García de Abajo, *Non-local effects in strongly-interacting plasmons*, NATO-META'2008, Marrakesh (Morocco), May 2008.
- 35.- F. J. García de Abajo, R. Sainidou, T. V. Teperik, M. Dennis, and N. I. Zheludev, *Light confinement at interfaces and Talbot effects in surface modes of various systems*, Metamaterials'2007, Rome (Italy), October 2007.
- 34.- F. J. García de Abajo, R. Sainidou, T. V. Teperik, M. Dennis, and N. I. Zheludev, *Light confinement at surfaces and the plasmonics Talbot effect*, Frontiers in Optics 2007 (annual OSA meeting), San José (California, USA), September 2007.
- 33.- F. J. García de Abajo, *Mastering optical near fields in nanostructured materials*, Nicolás Cabrera XIV Summer School, Miraflores, Madrid (Spain), September 2007.
- 32.- F. J. García de Abajo, *Plasmonics using electron microscopy*, SPIE Optics+Photonics, Conference 6641, San Diego (California, USA), August 2007.
- 31.- F. J. García de Abajo, N. I. Zheludev, and M. Dennis, *The plasmonic Talbot effect*, SPIE Optics+Photonics, Conference 6638, San Diego (California, USA), August 2007.
- 30.- F. J. García de Abajo, *Mastering optical near fields in nanostructured materials*, International Workshop Photonic and Electronic Materials, San Sebastian (Spain), July 2007.
- 29.- F. J. García de Abajo, V. Myroshnychenko, J. Nelayah, M. Kociak, O. Stéphan, M. Tencé, D. Taverna, L. Henrard, C. Colliex, M. V. Bashevoy, F. Jonsson, N. I. Zheludev, I. Pastoriza-Santos, L. Liz-Marzán, and N. Yamamoto, *Plasmonics using electron microscopes*, Surface Plasmon Photonics SPP3, Dijon (France), June 2007.
- 28.- F. J. García de Abajo, T. Brixner, and W. Pfeiffer, *Mastering optical near fields in nanostructured materials*, DPG Spring Meeting, Ultrafast nanooptics symposium, Regensburg (Germany), March 2007.
- 27.- F. J. García de Abajo, *Electron-induced radiation emission (EIRE) as a probe of photonic structures*, International Workshop on New Trends in Electron Microscopy, Ringberg Castle, Tegernsee Lake (Germany), March 2007.

- 26.- F. J. García de Abajo, *Plasmons in nanoparticles*, Low Energy Spectrometry Symposium (LESS), Vienna (Austria), January 2007.
- 25.- F. J. García de Abajo, *Advances towards surface-state nanoelectronics*, International Topical Meeting on Nanophotonics and Metamaterials NANOMETA 2007, Seefeld (Austria), January 2007.
- 24.- F. J. García de Abajo, *Mechanisms of plasmon generation*, Workshop on Microscopy and Spectroscopy of Nanomaterials, Taipei (Taiwan), November 2006.
- 23.- F. J. García de Abajo, *Advances towards surface-state nanoelectronics*, NANO2006 Workshop – Perspectives in Nanoscience and Nanotechnology, San Sebastian (Spain), September 2006.
- 22.- F. J. García de Abajo, *Mechanisms of surface plasmon launching*, SPIE Optics+Photonics, Conference 6323, San Diego (California, USA), August 2006.
- 21.- F. J. García de Abajo, *Multiscale metamaterials with extraordinary optical properties*, SPIE Optics+Photonics, Conference 6320, San Diego (California, USA), August 2006.
- 20.- F. J. García de Abajo, *Cathodoluminescence as a probe of photonic structures*, Gordon Research Conference – Plasmonics, Keene (New Hampshire, USA), July 2006.
- 19.- F. J. García de Abajo, *Materials with extreme optical properties*, OSA – Photonic Metamaterials: from Random to Periodic, Grand Bahama Island (The Bahamas), June 2006.
- 18.- F. J. García de Abajo, *Valence excitations in electron microscopy*, Journées de spectroscopie de pertes d'énergie des électrons (JEELS), Blois (France), May 2006.
- 17.- F. J. García de Abajo, *Optical resonances in metallic systems: from nanoparticles to hole arrays*, FOM Decemberdagen, Veldhoven (The Netherlands), December 2005.
- 16.- F. J. García de Abajo and J. J. Sáenz, *Electromagnetic surface states in structured perfect-conductor surfaces*, Materials Research Society, Boston (Massachusetts, USA), December 2005.
- 15.- F. J. García de Abajo, *I. Interaction of Fast Charged Particles with Photonic Structures. II. Metamaterials with Extraordinary Optical Properties: Artificial dielectrics and Invisible Metals*. Phoremest - Nanophotonics to Realise Molecular Scale Technologies, Erice (Italy), August 2005.
- 14.- F. J. García de Abajo, *I. Determination of Optical Properties by Electron Microscopy. II. Plasmon Resonances in Metallic Nanoparticles*. Distributed European Doctoral School on Metamaterials, San Sebastian (Spain), July 2005.
- 13.- F. J. García de Abajo, *Lattice, site, and plasmon resonances in structured metal films*, International Symposium on Photonic and Electromagnetic Crystal Structures PECS VI, Crete (Greece), June 2005.
- 12.- F. J. García de Abajo, *Probing local optical properties with fast electrons*, Trends in Nanotechnology TNT 2004, Segovia (Spain), September 2004. **Keynote**.
- 11.- F. J. García de Abajo, A. G. Pattantyus-Abraham, N. Zabala, A. Rivacoba, M. O. Wolf, and P. M. Echenique, *Cherenkov radiation in photonic crystals*, International Workshop on Advances in Light Scattering by Particle Systems, Laredo (Spain), July 2004.
- 10.- F. J. García de Abajo, A. G. Pattantyus-Abraham, N. Zabala, A. Rivacoba, M. O. Wolf, and P. M. Echenique, *Multiscale metamaterials*, Photonic and Electronic Materials, San Sebastian (Spain), June 2004.
- 9.- F. J. García de Abajo, *The Cherenkov effect as a probe of photonic structures*, Euresco Conference on Nano-Optics: Surface Plasmon Photonics (SPP1), Granada (Spain), September 2003.
- 8.- F. J. García de Abajo, *The Cherenkov effect in photonic crystals*, Donostia Encounters on Particle-Solid Interactions, San Sebastian (Spain), September 2003.
- 7.- F. J. García de Abajo, *Photoelectron diffraction – MSCD and EDAC*, Tools for the Analysis and Interpretation of Experimental Data, Daresbury (UK), November 2001.
- 6.- F. J. García de Abajo, *Dispersión de radiación y espectros de pérdida de energía en nanoestructuras*, Reunión Nacional de Física del Estado Sólido, Madrid (Spain), February 2001.
- 5.- F. J. García de Abajo and C. S. Fadley, *Atoms talking to one another: multi-atom resonant photoemission*, Golden Gate Materials and Welding Technologies Conference, San Francisco (California, USA), February 1999.
- 4.- F. J. García de Abajo *Spin-flip in photoelectron diffraction*, Advanced Light Source Workshop on Theory and Computation for Synchrotron Applications, Berkeley (California, USA), October 1997.
- 3.- F. J. García de Abajo, *Resonant coherent excitation of ions in solids*, ESF Conference on “Particle-Solid Interactions”, San Sebastian (Spain), September 1997.

2.- F. J. García de Abajo, *Coherent electron emission by ion-solid interaction*, 14th International Conference on the Application of Accelerators in Research and Industry, Denton (Texas, USA), November 1996.

1.- F. J. García de Abajo, *Coherent electron emission by ion-solid interaction*, 11th International Conference on Inelastic Ion-Surface Collisions, Wangerooge (Germany), October 1996.

MAJOR CONTRIBUTIONS TO THE EARLY CAREER OF EXCELLENT RESEARCHERS

All of the former 33 PhDs and postdocs in García de Abajo's group have evolved into leading jobs in academia or industry. **Eleven previous group members are occupying academic positions.** Associate Professors: Alejandro Manjavacas (Univ. New Mexico), Andrea Marini (Univ. L'Aquila), Joel Cox (Southern Denmark Univ.), Rebecca Sainidou (Univ. Le Havre), Baptiste Auguié (Victoria Univ. Wellington). Group Leaders: Johan Christensen (IMDEA Materials), Christin David (FSU Jena). Assistant Professors: Ana Asenjo-Garcia (Columbia Univ.), Deng Pan (East China Normal Univ.), Shahaf Asban (Univ. South Florida), Andrea Konečná (Brno Univ.).

OTHER ACCOLADES FOR GARCÍA DE ABAJO'S GROUP MEMBERS

Outstanding PhD Thesis Award from Complutense Univ. Madrid (Alejandro Manjavacas, 2014). Best PhD Thesis in Condensed Matter Theory (GEFES) in Spain (Alejandro Manjavacas, 2015; Renwen Yu, 2019). Best ICFO theoretical PhD Thesis Award (Renwen Yu, 2020). Outstanding PhD Thesis Award from Polytechnic Univ. Catalonia (Renwen Yu, 2021). European Physics Society (EPS-QEOD) Thesis Prize (Renwen Yu, 2021).

TUTORING OF PhD STUDENTS

- 2013 Alejandro Manjavacas Arévalo,
Light-matter interaction at the nanoscale,
Universidad Complutense de Madrid (Spain)
- 2013 Isabel Romero Pérez,
Plasmon interaction in coupled nanoparticles and voids,
Universidad del País Vasco (Spain)
- 2013 Xesús Bendaña Sueiro,
Near-field excitation of optical confined modes,
Universidad de Santiago (Spain)
- 2014 Ana Asenjo García,
Plasmon, light, and electron beam interactions at the nanoscale,
Universidad Complutense de Madrid (Spain)
- 2014 Christin David,
Nonlocal and collective phenomena in the plasmons of metallic nanostructures,
Universidad Autónoma de Madrid (Spain).
- 2016 Iván Silveiro Flores,
Plasmon response of graphene nanostructures,
Universidad de Santiago (Spain)
- 2017 Vahagn Mkhitarian,
*Nanophotonics of ultrathin films and 2D periodic structures: a combined
experimental and theoretical study*,
ICFO / Universidad Politècnica de Catalunya (Spain)
- 2018 José Ramón Martínez Saavedra,
Classical and quantum aspects of the optical response at the nanoscale,
ICFO / Universidad Politècnica de Catalunya (Spain)
- 2018 Lijun Meng,
*Thermal and optical-gain effects in nanophotonics with applications to sensing
and perfect absorption*,
ICFO / Universidad Politècnica de Catalunya (Spain)
- 2019 Renwen Yu,
Towards next-generation nanophotonic devices,
ICFO / Universidad Politècnica de Catalunya (Spain)

- 2020 Sandra de Vega Esteban,
Plasmon-electron interactions in low dimensional materials,
ICFO / Universidad Politècnica de Catalunya (Spain)
- 2022 Eduardo J. C. Dias,
Nanoscale manipulation of optical fields,
ICFO / Universidad Politècnica de Catalunya (Spain)
- 2022 Álvaro Rodríguez Echarri,
Nonlocal and nonlinear effects in nanophotonics,
ICFO / Universidad Politècnica de Catalunya (Spain)
- 2023 Valerio Di Giulio,
Nanophotonics with charged particles,
ICFO / Universidad Politècnica de Catalunya (Spain)
- In progress: Saad Abdullah
Leila Prélat
Adamantios Synanidis
Cruz Velasco
Yina Wu

TUTORING OF POSTDOCS

- 2002 Thomas Strasser
- 2000-2004 Luis Alberto Blanco Jiménez
- 2002-2006 Tatiana Teperik
- 2004-2005 Raquel Gómez Medina
- 2006-2008 Revekka Sainidou
- 2009 Baptiste Auguié
- 2007-2013 Viktor Myroshnychenko
- 2010-2012 Johan Christensen
- 2011-2012 Sukosin Thongrattanasiri
- 2013-2019 Joel Douglas Cox
- 2014-2017 Andrea Marini
- 2016-2020 Deng Pan
- 2017-2018 Zakaria M. Abd El-Fattah
- 2017-2021 Vahagn Mkhitarian
- 2019-2020 Shahav Asban
- 2019-2021 Renwen Yu
- 2019-2021 Andrea Konečná
- 2019-2022 Kamran Akbari
- 2021-2022 Saeid Sasgarnezhad
- 2019- Fadil Iyikanat
- 2020- P. André D. Gonçalves
- 2022- Eduardo J. C. Dias
- 2023- Valerio Di Giulio

PATENTS

- *An optical system and method for sub-wavelength energy concentration*, N. I. Zheludev, F. Huang, and F. J. García de Abajo. International publication number: WO 2008/009931 A1. Publication date: Jan. 28, 2008.
- *Particule comportant deux métaux plasmoniques*, E. Huguet, L. M. Liz Marzán, I. Pastoriza-Santos, A. P. A. Glaria, and F. J. García de Abajo. International publication number: WO 2012/046204 A1. Publication date: Apr. 12, 2012.
- *Single-photon source*, A. Polman, E. J. R. Vesseur, T. Coenen, and F. J. García de Abajo. European application number: 10186046.8
- *Partículas codificadas*, L. M. Liz-Marzán, R. A. Álvarez-Puebla, F. J. García de Abajo, and E. F. García-Rico. International publication number: WO 2012/143577 A1. Publication date: Aug. 13, 2012.
- *Photoconversion device with enhanced photon absorption*, F. Koppens and F. J. García de Abajo. US patent number: 8,507,890 B1. Publication date: Aug. 13, 2013.

- *Magnetic field generator*, N. I. Zheludev, V. A. Fodotov, A. Tsiatmas, F. J. García de Abajo, and W. James. US patent number: 8,780,677 B2. Publication date: Jul. 15, 2014.
- *Tunable light modulation using graphene*, V. Pruneri, R. Yu, and F. J. García de Abajo. International publication number: WO 2016/141125 A1. Publication date: Sept. 9, 2015.

LONG TERM VISITS

- 2010-2013 Optoelectronic Res. Ctr., University of Southampton (UK) (visiting professor, 20 months)
- 2007 AMOLF, Amsterdam (The Netherlands) (2 months)
- 2006 University of Southampton (UK) (Visiting Professor, 2 months)
- 2005-2006 Universidad Autónoma de Madrid (Spain) (sabbatical, 12 months)
- 1994 Centro Atómico Bariloche (Argentina) (1 month)
- 1994 University of California, Irvine (California, USA) (2 months)
- 1992 ORNL, Oak Ridge (Tennessee, USA) (1 month)
- 1991 ORNL, Oak Ridge (Tennessee, USA) (2 months)
- 1987 CERN, Geneva (Switzerland) (2 months)

GRANTS AS PRINCIPAL INVESTIGATOR

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- ERC Adv Grant 789104-eNANO funded by ERC, *Free electrons as ultrafast nanoscale probes*, Dec. 2018 to Nov. 2023, 1,899,788 €.
- MAT2017-88492-R funded by Plan Nacional of the Spanish MEC, *Interaction of plasmons, photons, and free electrons in the nanoscale*, Jan. 2018 to Dec. 2020, 181,500 €.
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- FP7-ICT-2013-613024 STREP funded by the European Commission, *GRASP – Graphene-based single-photon nonlinear optical devices*, Jan. 2014 to Jun. 2017, 233,370 € for my group.
- MAT2014-59096-P funded by Plan Nacional of the Spanish MEC, *Graphene plasmons and their interaction with low-energy electron beams*, Jan. 2015 to Dec. 2017, 121,000 €.
- MAT2010-14885 funded by Plan Nacional of the Spanish MEC, *Interaction of light and fast electrons with photonic nanostructures*, Jan. 2011 to Dec. 2013, 96,800 €.
- FP7-ICT-2009-4-248855 Network of Excellence funded by the European Commission, *Nanophotonics4Energy – Nanophotonics for energy efficiency*, Jan. 2010 to Dec. 2013, 99,693 € for my group.
- FP7-ICT-2009-4-248909 STREP funded by the European Commission, *LIMA – Improve photovoltaic efficiency by applying novel effects at the limits of light to matter interaction*, Jan. 2010 to Dec. 2012, 145,093 € for my group.
- NMP4-SL-2008-213669 STREP funded by the European Commission, *ENSEMBLE – Engineered SELF-organized Multi-component structures with novel controllaBLE Electromagnetic functionalities*, May 2008 to Apr. 2012, 388,014 € for my group.
- Consolider 18411 funded by the Spanish MEC, *Nanolight – Light Control on the Nanoscale*, Oct. 2007 to Sept. 2012, ca. 350,000 € for my group.
- MAT2007-66050 funded by Plan Nacional of the Spanish MEC, *Interaction of light and fast electrons with photonic nanostructures*, Oct. 2007 to Sept. 2010, 117,370 €.
- NMP4-CT-2006-016881 STREP funded by the European Commission, *SPANS – Single particle nano switch*, May 2006 to Apr. 2009, 255,000 € for my group. I was the coordinator of this STREP.
- NAN2004-08843-C05-05 funded by Acciones Especiales of the Spanish MEC, *Teoría de Materiales Jerarquizados para Nanofotónica*, Dec. 2005 to Dec. 2008, 108,000 € for my group.

- Bacterial Crystals Intramural funded by CSIC (Spain), Jan. 2005 to Dec. 2007, 33,800 € for my group. I was the coordinator of the project.
- Shofar Agni Intramural funded by CSIC (Spain), Jan. 2005 to Dec. 2007, 37,800 € for my group.
- FIS2004-06490-C03-02 funded by Plan Nacional of the Spanish MEC, *Respuesta electromagnética de estructuras complejas*, Jan. 2005 to Dec. 2007, 63,000 €.