

## CURRICULUM VITAE CARLOS TEJEDOR

Born in Madrid (Spain), April 25, 1949.

### Address

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### Degrees

- Ph. D. 1976. Universidad Autónoma de Madrid.
- Graduate in Physics. 1971. Universidad Complutense de Madrid.

### Positions at the University

- 1972-76: Teaching assistant at the Universidad Autónoma de Madrid.
- 1976-78: Junior Lecturer at the Universidad Autónoma de Madrid.
- 1978-79: Postdoctoral Contract (with Prof. S. Lundqvist) at the Institute of Theoretical Physics, Chalmers University, Gotenburg (Sweden).
- 1979-86: Associate Professor at the Universidad Autónoma de Madrid.
- 1986-august 2019: Full Professor at the Universidad Autónoma de Madrid.
- September 2019-Present: Emeritus Professor at the Universidad Autónoma de Madrid.

### Research data

Web of Science Researcher ID: H-9537-2014

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211 publications in international journals.

More than 5900 citations.

Web of Science **h index: 41.**

Participant in 54 Research Projects, 24 as Principal Investigator.

Supervisor of 15 PhD Thesis:

- J. Sánchez-Dehesa
- L. Brey

- P. Schulz (together with C.E.T. Goncalves da Silva)
- J. J. Palacios
- F. J. Rodríguez
- J. H. Oaknin
- M. R. S. Tavares (together with G.E. Marques)
- J. Fernández-Rossier
- B. Paredes
- D. Porrás
- J. I. Perea
- M. del Valle (together with G. Cuniberti)
- E. del Valle
- A. Gonzalez-Tudela
- C. Sanchez-Munoz (together with F.P. Laussy)

### Honors

- Fellow of the American Physical Society since 1999.
- Nominated in 2016 as an Outstanding Referee of the Physical Review and Physical Review Letters journals.

### Fields of interest

#### *Theory on semiconductor nanostructures: quantum wells, wires and dots.*

- Tunneling.
- Quantum Hall effect.
- Fermi edge singularities.
- Kondo effect.
- Exciton and polariton condensation.
- Nanoscopic quantum optics.
- Nanostructures as components for Quantum Information.

### List of publications in the last years

1. “Collective fluid dynamics of a polariton condensate in a semiconductor microcavity” A. Amo, D. Sanvitto, F.P. Laussy, D. Ballarini, E. del Valle, M.D. Martin, A. Lemaître, J. Bloch, D.N. Krizhanovskii, M.S. Skolnick, C. Tejedor and L. Viña, *Nature*, **457**, 291 (2009).
2. “Luminescence spectra of quantum dots in microcavities. I: Bosons” F.P. Laussy, E. del Valle and C. Tejedor, *Phys. Rev. B*, **79**, 235325 (2009).
3. “Luminescence spectra of quantum dots in microcavities. II: Fermions” E. del Valle, F. P. Laussy and C. Tejedor, *Phys. Rev. B*, **79**, 235326 (2009).
4. “Dynamics of formation and decay of coherence in a polariton condensate”, E. del Valle, D. Sanvitto, A. Amo, F.P. Laussy, R. Andre, C. Tejedor and L. Vina, *Phys. Rev. Lett.*, **103**, 096404 (2009).
5. “Optical read-out of single carrier spin in semiconductor quantum dots”, F. Troiani I. Wilson-Rae and C. Tejedor, in “Semiconductor quantum bits”, ed. by F. Henneberger and O. Benson, (Pan Stanford Publishing, Singapur, 2009) p. 167.
6. “Polariton condensates put in motion”, D. Sanvitto, A. Amo, F.P. Laussy, A. Lemaître, J. Bloch, C. Tejedor and L. Vina, *Nanotechnology*, **21**, 134025 (2010).

7. “Two photon lasing by a single quantum dot in a high Q microcavity”, E. del Valle, S. Zippilli, F. P. Laussy, A. Gonzalez-Tudela, G. Morigi and C. Tejedor, *Phys. Rev. B*, **81**, 035302 (2010).
8. “Effect of pure dephasing on the Jaynes-Cummings nonlinearities”, A. Gonzalez-Tudela, E. del Valle, E. Cancellieri, C. Tejedor, D. Sanvitto and F.P. Laussy, *Optics Exp.*, **18**, 7002 (2010).
9. “Persistent currents and quantised vortices in a polariton superfluid”, D. Sanvitto, F. M. Marchetti, M. H. Szymanska, G. Tosi, M. Baudisch, F. P. Laussy, D. N. Krizhanovskii, M. S. Skolnik, L. Marrucci, A. Lemaitre, J. Bloch, C. Tejedor and L. Viña, *Nature Phys.*, **6**, 527 (2010).
10. “Optical coupling of two distant InAs/GaAs quantum dots by a photonic crystal microcavity”, E. Gallardo, L.J. Martinez, A. K. Novak, D. Sarkar, H.P. van der Meulen, J.M. Calleja, C. Tejedor, I. Prieto, D. Granados, A.G. Taboada, J.M. Garcia and P.A. Postigo, *Phys. Rev. B*, **81**, 193301 (2010).
11. “Emission Polarization Control in Semiconductor Quantum Dots coupled to a Photonic Crystal Microcavity”, E. Gallardo, L.J. Martínez, A.K. Nowak, H.P. van der Meulen, J.M. Calleja, C. Tejedor, I. Prieto, D. Granados, A.G. Taboada, J.M. García and P.A. Postigo, *Optics Express*, **18**, 13301 (2010).
12. “Spontaneous and triggered vortices in polariton optical-parametric-oscillator superfluids”, F.M. Marchetti, M.H. Szymanska, C. Tejedor, and D. Wittaker, *Phys. Rev. Lett.*, **105**, 063902 (2010).
13. “Dissipative dynamics of a solid-state qubit coupled to surface plasmons: from non-Markov to Markov regimes”, A. Gonzalez-Tudela, F.J. Rodriguez, L. Quiroga and C. Tejedor, *Phys. Rev. B*, **82**, 115334 (2010).
14. “Superflow of resonantly driven polaritons against a defect”, E. Cancellieri, F. M. Marchetti, M. Szymanska and C. Tejedor, *Phys. Rev. B*, **82**, 224512 (2010).
15. “Entanglement of two-qubits mediated by one-dimensional plasmonic waveguides”, A. Gonzalez-Tudela, D. Martin-Cano, E. Moreno, L. Martin-Moreno, C. Tejedor and F.J. Garcia-Vidal, *Phys. Rev. Lett.*, **106**, 020501 (2011).
16. “Multistability of a two-component exciton-polariton fluid”, E. Cancellieri, F. M. Marchetti, M. Szymanska and C. Tejedor, *Phys. Rev. B*, **83**, 214507 (2011).
17. “Onset and dynamics of vortex-antivortex pairs in polariton parametric oscillator superfluids”, G. Tosi, F. M. Marchetti, D. Sanvitto, C. Antón, M. Szymanska, A. Berceanu, C. Tejedor, L. Marrucci, L. Lemaitre, J. Bloch and L. Viña, *Phys. Rev. Lett.*, **107**, 036401 (2011).
18. “Generation of a two-photon state from a quantum dot in a microcavity”, E. del Valle, A. Gonzalez-Tudela, E. Cancellieri, F. P. Laussy and C. Tejedor, *New J. Phys.*, **13**, 113014 (2011).
19. “Dissipation-driven generation of two-qubit entanglement mediated by plasmonic waveguides”, D. Martin-Cano, A. Gonzalez-Tudela, L. Martin-Moreno, F.J. Garcia-Vidal, C. Tejedor and E. Moreno, *Phys. Rev. B*, **84**, 235306 (2011).
20. “Frictionless flow in a binary polariton superfluid”, E. Cancellieri, F. M. Marchetti, M. Szymanska, D. Sanvitto and C. Tejedor, *Phys. Rev. Lett.*, **108**, 065301 (2012); Erratum PRL, **113**, 169902 (2014).
21. “Luminescence spectra of quantum dots in microcavities”, F. Laussy, E. del Valle, A. Laucht, A. Gonzalez-Tudela, M. Kaniber, J. J. Finley, and C. Tejedor, chapter 9 of “Quantum optics with semiconductor nanostructures”, ed. by F. Jahnke, p 293 (Woodhead Publishing Series in Electronic and Optical Materials No. 28, Cambridge, 2012).

22. “Plasmon-polariton emission from a coherently  $p$ -excited quantum dot near a metal interface”, C. Sanchez-Munoz, A. Gonzalez-Tudela and C. Tejedor, *Phys. Rev. B*, **85**, 125301 (2012).
23. “Exploring qubit-qubit entanglement mediated by one-dimensional Plasmon nanowaveguides”, A. Gonzalez-Tudela, D. Martin-Cano, E. Moreno, L. Martin-Moreno, F. J. Garcia-Vidal, and C. Tejedor, *Phys. Stat. Sol.*, **9**, 1303 (2012).
24. “Theory of frequency-filtered and time-resolved N-photon correlations”, E. del Valle, A. Gonzalez-Tudela, F. P. Laussy, C. Tejedor and M. J. Hartmann, *Phys. Rev. Lett.*, **109**, 183601 (2012).
25. “Control and ultrafast dynamics of a two-fluid polariton switch”, M. De Giorgi, D. Ballarini, E. Cancellieri, F. M. Marchetti, M. H. Szymanska, C. Tejedor, R. Cingolani, E. Giacobino, A. Bramati, G. Gigli, and D. Sanvitto, *Phys. Rev. Lett.*, **109**, 266407 (2012).
26. “Two-photon spectra of quantum emitters”, Gonzalez-Tudela, F. P. Laussy, C. Tejedor, M. J. Hartmann and E. del Valle, *New J. Phys.*, **15**, 033036 (2013).
27. “Theory of the strong coupling between quantum emitters and propagating surface plasmons”, A. González-Tudela, P. A. Huidobro, L. Martín-Moreno, C. Tejedor, and F.J. García-Vidal, *Phys. Rev. Lett.*, **110**, 126801 (2013).
28. “Bichromatic dressing of a quantum dot detected by a remote second quantum dot” M. Maragkou, C. Sanchez-Muñoz, S. Lazic, E. Chernysheva, H. P. van der Meulen, A. Gonzalez-Tudela, C. Tejedor, L. J. Martinez, I. Prieto, P. A. Postigo, and J. M. Calleja, *Phys. Rev. B*, **88**, 075309 (2013).
29. “Reversible dynamics of single quantum emitters near metal-dielectric interfaces”, A. González-Tudela, P. A. Huidobro, L. Martín-Moreno, C. Tejedor, and F.J. García-Vidal, *Phys. Rev. B (R.C.)*, **89**, 041402(R) (2014).
30. “Emitters of N-photon bundles”, C. Sanchez Munoz, E. del Valle, A. Gonzalez-Tudela, K. Müller, S. Lichtmannecker, M. Kaniber, C. Tejedor, J.J. Finley, and F.P. Laussy. *Nature Photonics*, **8**, 550 (2014).
31. “Quantum coherence of light-matter condensates that have never seen each other”, C. Anton, G. Tosi, M. D. Martin, Z. Hatzopoulos, G. Konstantinidis, P. Eldridge, P.G. Savvidis, C. Tejedor, and L. Vina, *Phys. Rev. B (R.C.)*, **90**, 081407(R) (2014).
32. “Violation of classical inequalities by photon frequency filtering”, C. Sanchez-Muñoz, E. del Valle, C. Tejedor, F.P. Laussy, *Phys. Rev. A*, **90**, 052111 (2014).
33. “Enhanced two-photon emission from a dressed biexciton”, C. Sanchez-Muñoz, F.P. Laussy, C. Tejedor and E. del Valle, *New J. Phys.* **17**, 123021 (2015).
34. “Quantum phase transitions detected by a local probe using time correlations and violations of Leggett-Garg inequalities”, F. Gomez-Ruiz, J. J. Mendoza-Arenas, F. J. Rodriguez, C. Tejedor and L. Quiroga, *Phys. Rev. B*, **93**, 035441 (2016).
35. “Filtering multiphoton emission from state-of-the-art cavity QED”, C. Sanchez-Muñoz, F. P. Laussy, E. del Valle, C. Tejedor and A. Gonzalez-Tudela, *Optica* **5**, 14 (2018).
36. “Temperature dependence of the coherence in polariton condensates”, E. Rozas, M.D. Martín, C. Tejedor, L. Viña, G. Deligeorgis, Z. Hatzopoulos and P.G. Savvidis, *Phys. Rev B* **97**, 075442 (2018).
37. “Universal two-time correlations, out-of-time-ordered correlators and Leggett-Garg inequality violation by edge Majorana fermion qubits”, F. J. Gómez-Ruiz, J. J. Mendoza-Arenas, F. J. Rodríguez, C. Tejedor, and L. Quiroga, *Phys. Rev. B*, **97**, 235134 (2018).
38. “Spontaneous patterns in coherently driven polariton microcavities”, G. Díaz-Camacho, C. Tejedor and F.M. Marchetti, *Phys. Rev. B* **97**, 245309 (2018).

39. “Renyi entropy singularities as signatures of topological criticality in coupled photon-fermion systems”, F. P. M. Mendez-Cordoba, J. J. Mendoza-Arenas, F. J. Gomez-Ruiz, F.J. Rodriguez, C. Tejedor and L. Quiroga, *Phys. Rev. Research*, **2**, 043264 (2020).