Producció científica derivada de les tesis defensades en el programa de Doctorat en Física

Línia de recerca: Relativitat i Astrofísica

Any de defensa	Doctorand/a	Títol de la tesi
2018	David Martínez Gómez	High-frequency waves and instabilities in multi-fluid partially ionized solar plasmas

Contribucions científiques derivades:

Martínez-Gómez, D., Soler, R., i Terradas J. (2015). Onset of the Kelvin-Helmholtz instability in partially ionized magnetic flux tubes. *Astronomy and astrophysics, 578, a104*. <https://doi.org/10.1051/0004-6361/201525785>.

Martínez-Gómez, D., Soler, R., i Terradas J. (2016). Multi-fluid approach to high-frequency waves in plasmas.I. Small-amplitude regime in fully ionized medium. *The astrophysical journal, 832*, 101. <https://doi.org/10.3847/0004-637X/832/2/101>.

Martínez-Gómez, D., Soler, R., i Terradas J. (2017). Multi-fluid approachto high-frequency waves in plasmas. II. Small-amplitude regime in partially ionized media. *The astrophysical journal, 837*: 80. <https://doi.org/10.3847/1538-4357/aa5eab>.

Martínez-Gómez, D., Soler, R., i Terradas J. (2018). Multi-fluid approachto high-frequency waves in plasmas. III. Nonlinear regime and plasma heating. *The astrophysical journal, 856*, 16. <https://doi.org/10.3847/1538-4357/aab156>.

Zapiór, M. i Martínez-Gómez, D. (2016). Direct detection of the helical magneticfield geometry from 3D reconstruction of prominence knot trajectories. *The astrophysical journal, 817*: 123. <https://doi.org/10.3847/0004-637X/817/2/123>.

Any de defensa	Doctorand/a	Títol de la tesi
2019	Samuel Rial Lesaga	Temporal evolution of MHD waves in solar coronal arcades

Contribucions científiques derivades:

Rial, S., Arregui, I., Oliver, R., i Terradas, J. (2019). Determining nor- mal mode features from numerical simulations using CEOF analysis: I. Test case using transverse oscillations of a magnetic slab. *ApJ 876(1)*, 86. doi:10.3847/1538-4357/ab1417.

Rial, S., Arregui, I., Terradas, J., Oliver, R., i Ballester, J. L. (2010). Three-dimensional propagation of magnetohydrodynamic waves in solar coronal arcades. *ApJ 713*, 651661. doi:10.1088/0004-637X/713/1/651.

Rial, S., Arregui, I., Terradas, J., Oliver, R., i Ballester, J. L. (2013). Wave leakage and resonant absorption in a loop embedded in a coronal arcade. *ApJ 763*, 16. doi:10.1088/0004-637X/763/1/16.

Any de defensa	Doctorand/a	Títol de la tesi
2019	Miquel Oliver Almiñana	Gravitational wave data analysis for the advanced detector era

Contribucions científiques derivades:

Oliver, M., Keitel, D. i Sintes, Alicia M. (2019). The adaptive transient hough method for long-duration gravitational wave transients. *Physical review D 99*, 104067. doi: <https://doi.org/10.1103/PhysRevD.99.104067>.

Driggers, J. C. et al. (2019). Improving astrophysical parameter estimation via offline noise subtraction for advanced LIGO. *Physical review D99*, 042001. doi: 10.1103/PhysRevD.99.042001.

Oliver, Miquel et al. (2019). Matched-filter study and energy budget suggest no detectable gravitational-wave 'extended emission' from GW170817". *Monthly notices of the Royal Astronomical Society, 485(1)*, 843–850. doi: 10.1093/mnras/stz439.

Abbott, B. P. et al. (2018). Search for gravitational waves from a long-lived remnant of the binary neutron star merger GW170817. *The astrophysical journal letters, 851(1)*. doi: 10.3847/2041-8213/aa9a35.

Covas, P. B. et al. (2018). Identification and mitigation of narrow sectral artifacts that degrade searches for persistent gravitational waves in the first two observing runs of advanced LIGO. *Physical review 97*, 082002. doi: 10.1103/PhysRevD. 97.082002.

Abbott, Benjamin P. et al. (2018). Full band all-sky search for periodic gravitational waves in the O1 LIGO data. *Physical review D97*,102003. doi: 10.1103/PhysRevD.97.102003.

Walker, M. et al. (2017). Effects of transients in LIGO suspensions on searches for gravitational waves. *Rev. Sci. Instrum. 88(12*), 124501. doi: 10.1063/1. 5000264.

Abbott, Benjamin P. et al. (2017). All-sky search for periodic gravitational waves in the O1 LIGO data. *Physical review D96*, 062002. doi: 10.1103/PhysRevD.96.062002.

Walsh, Sinead et al. (2016). Comparison of methods for the detection of gravitational waves from unknown neutron stars. *Physical review D94*, 124010. doi: 10.1103/PhysRevD.94.124010.

Any de defensa	Doctorand/a	Títol de la tesi
2019	Miguel Ángel Andrés Bezares Figueroa	Coalescence of Exotic Compact Objects in the new era of gravitational wave astronomy

Contribucions científiques derivades:

Bezares, M., Palenzuela, C. i Bona, C. (2017). Final fate of compact boson star mergers. *Physical review D, 95(12)*, 124005. doi: 10.1103/PhysRevD.95.124005.

Palenzuela, C., Pani, P., Bezares, M., Cardoso, V., Lehner, L., Liebling, S. (2017). Gravitational wave signatures of highly compact boson star binaries. *Physical review D, 96 (10)*, 104058. doi: 10.1103/PhysRevD.96.104058.

Palenzuela, C., Miñano, B., Vigano, D., Arbona, A., Bona-Casas, C., Rigo, A., Bezares, M., Bona, C. i Massó, J. (2018). A Simflowny-based finite-difference code for high-performance computing in relativity. *Classical and quantum gravity, 32(18)*, 185007. doi: 10.1088/1361-6382/aad7f6.

Bezares, M., i Palenzuela, C. (2018). Gravitational waves from dark boson star binary mergers. *Classical and quantum gravity, 35(23)*, 234002. doi: 10.1088/1361-6382/aae87c.

Bezares, M., Vigano, D., i Palenzuela, C. (2019). «Signatures of dark matter cores in binary neutron star mergers». *Physical review D, 100(4)*. id.044049. doi: 10.1103/PhysRevD.100.044049.

Raposo, G., Pani, P., Bezares, M., Palenzuela, C., i Cardoso, V. (2019). Anisotropic stars as ultracompact objects in general relativity. *Physical review D 99,* 104072. doi: https://doi.org/10.1103/PhysRevD.99.104072.

Bona, C., Bezares, M., Pons, B., i Vigano, D. (2019). 3 + 2 cosmology: unifying FRW metrics in the bulk. *Physical review D 99*, 043530. doi: 10.1103/PhysRevD.99.043530.

Bona, C., i Bezares, M. (2019). Kaluza-Klein cosmology: the bulk mètric. *Physical review D 100*, 043509. doi: <https://doi.org/10.1103/PhysRevD.100.043509>.

Línia de recerca: Meteorologia, Oceanografia Física i Física del Clima

Any de defensa	Doctorand/a	Títol de la tesi
2016	Juan Manuel Sayol España	On the complexity of upper ocean mesoscale Dynamics

Contribucions científiques derivades:

Sayol, J. M., Orfila, A., Simarro, G., López, C., Renault, L., Galán, A., Conti, D. (2013). Sea surface transport in the western Mediterranean sea: a lagrangian perspective. *Journal of geophysical research: oceans 118(12)*, 6371-6384.

Sayol, J. M., Orfila, A., Oey, L. Y. (2016). Wind induced energy-momentum distribution along the Ekman-Stokes layer. Application to the western Mediterranean sea climate. *Deep sea research, I (111)*, 34-49.

Sayol, J. M., Orfila, A., Simarro, G., Conti, D., Renault, L., Molcard, A. A Lagrangian model for tracking surface spills and SaR operations in the ocean. *Environmental modelling i software 52(2)*, 74-82.

Bellomo, L., Griffa, A., Cosoli, S., Falco, P., Gerin, R., Iermano, I., Kalampokis, A., Kokkini, Z., Lana, A., Magaldi, G., Mamoutos, I., Mantovani, C., Marmain, J., Potiris, E., Sayol, J.M., Barbin, Y., Berta, M., Borghini, M., Bussani, A., Corgnati, L., Dagneaux, Q., Gaggelli, J., Guterman, P., Mallarino, D., Mazzoldi, A., Molcard, A., Orfila, A., Poulain, P. M., Quentin, C., Tintoré, J., Uttieri, M., Vetrano, A., Zambianchi, E., i Zervakis, V. (2015). Toward an integrated HF radar network in the Mediterranean sea to improve search and rescue and oil spill response: the TOSCA project experience. *Journal of operational oceanography 8(2)*, 95-107

Orfila, A., Molcard, A., Sayol, J. M., Marmain, J., Bellomo, L., Quentin, C., i Barbin, Y. (2015). Empirical forecasting of HF-radar velocity using genetic algorithms. *Geoscience and remote sensing, IEEE transactions 53(5),* 2875-2886.

Hodges, B., Orfila, A., Sayol, J. M., i Hou, X. (2015). Operational oil spill modelling: from science to engineering applications in the presence of uncertainty. Mathematical modelling and numerical simulation of oil pollution problems. *The reacting atmosphere, 2*, Springer Verlag, Heidelberg. ISBN: 978-3-319- 16458-8.

Sayol, J. M., Balaguer, P., Conti, D., Rietz, A., García-Sotillo, M., Simarro, G., Tintoré J., i Orfila, A. (2014). Towards an integrated oil spill system: from modelling to the decision support yool. *Oil spills: environmental prevention and ecological impacts,* Nova Science Publishers, New York. ISBN: 978-1-63321-548-1.

Any de defensa	Doctorand/a	Títol de la tesi
2017	Josep Llasses Gascón	Study of the uncertainties of Mediterranean sea climate monitoring and projections

Contribucions científiques derivades:

Llasses, J., Jordà, G., i Gomis, D. (2015). Skills of different hydrographic networks in capturing changes in the Mediterranean sea at climate scales. *Climate research, 63(1)*, 18. doi: 10.3354/ cr01270.

Llasses, J., Jordà, G., Gomis, D., Adloff, F., Macías, D., Harzallah, A., Arsouze, T., Akthar, N., Li, L., Elizalde, A., i Sannino, G. (2016). Heat and salt redistribution within the Mediterranean sea in the med CORDEX model ensemble. *Climate dynamics, 1(25)*. doi: 10.1007/s003820163242 0.

Llasses, J., Jordà, G., i Gomis, D. (2015). Reliability of uncertainty estimates from climate projection ensembles. *Journal of black sea/Mediterranean environment. Special issue*, 21-24.

Gomis, D., Álvarez Fanjul, E., Jordà.,G., Marcos, M., Aznar, R., Rodríguez Camino, E., Sánchez Perrino, J .C., Rodríguez González, J. M., Martínez Asensio, A., Llasses, J., Pérez B. G., i Sotillo, M. (2016). Regional marine climate scenarios in the NE atlantic sector close to the Spanish shores. *Scientia marina 80(S1)*: 215234. doi: 10.3989/scimar.04328.07A.

Any de defensa	Doctorand/a	Títol de la tesi
2018	Gemma Simó Diego	Effect of the surface thermal heterogeneities on the atmospheric boundary layer

Contribucions científiques derivades:

Simó, G., Cuxart, J., Jiménez, M. A., Martínez-Villagrasa, D., Picos, R., López-Grifol, A., i Martí, B. (2019). Observed atmospheric and surface variability on heterogeneous terrain at the hectometer scale and related advective transports. *Journal of geophysical research: atmospheres,124(16)*, 9407-9422. doi: https://doi.org/10.1029/2018JD030164

García-Santos, V., Cuxart, J., Jiménez, M. A., Martínez-Villagrasa, D., Simó, G., Picos, R., i Caselles, V. (2018). Study of temperature heterogeneities at sub-kilometric scales

and influence on surface–atmosphere energy interactions. *IEEE transactions on geoscience and remote sensing, 57(2)*, 640-654. doi: 10.1109/TGRS.2018.2859182.

Simó, G., Martínez-Villagrasa, D., Jiménez, M. A., Caselles, V., i Cuxart, J. (2019). Impact of the surface–atmosphere variables on the relation between air and land surface temperatures. Recuperat de: *Meteorology and climatology of the Mediterranean and Black seas,* 219-233. Birkhäuser, Cham. doi: <https://doi.org/10.1007/s00024-018-1930-x>.

Azeñas, V., Cuxart, J., Picos, R., Medrano, H., Simó, G., López-Grifol, A., i Gulías, J. (2018). Thermal regulation capacity of a green roof system in the mediterranean region: rhe effects of vegetation and irrigation level. *Energy and buildings, 164*, 226-238. doi: <https://doi.org/10.1016/j.enbuild.2018.01.010>.

Simó, G., García-Santos, V., Jiménez, M. A., Martínez-Villagrasa, D., Picos, R., Caselles, V., i Cuxart, J. (2016). Landsat and local land surface temperatures in a heterogeneous terrain compared to modis values. *Remote sensing, 8(10),* 849. doi: <https://doi.org/10.3390/rs8100849>

Jiménez, M. A., Simó, G., Wrenger, B., Telisman-Prtenjak, M., Guijarro, J. A., i Cuxart, J. (2016). Morning transition case between the land and the sea breeze regimes. *Atmospheric research, 172*, 95-108. doi: <https://doi.org/10.1016/j.atmosres.2015.12.019>

Any de defensa	Doctorand/a	Títol de la tesi
2019	Alejandra Rodríguez Enríquez	Physical and economic impacts due to sea level changes and wind-waves around the Balearic Islands

Contribucions científiques derivades:

Enríquez, A. R., Marcos, M., Álvarez-Ellacuría, A., Orfila, A., i Gomis, D. (2017). Changes in beach shoreline due to sea level rise and waves under climate change scenarios application to the Balearic Islands. *Natural hazards and earth system sciences, 17*, 1075-1089.

Enríquez, A. R., Marcos, M., Falqués, A., i Roelvink, D. (2019). Assessing beach and dune erosion and vulnerability under sea level rise: a case study in the Mediterranean sea. *Frontiers in marine science, 6*, 4.

Enríquez, A. R. i Bujosa, A. (2019). *Measuring the economic impact of climateinduced environmental changes on sun-and-beach tourism. Under review in climatic change.*

Any de defensa	Doctorand/a	Títol de la tesi
2019	Diego Saúl Carrió Carrió	Implementation of a high-resolution ensemble kalman filter system for the Western Mediterranean

Contribucions científiques derivades:

Carrió, D. S. i Homar, V. (2016). Potential of sequential EnKF for the short-range prediction of a maritime severe weather event. *Atmospheric research, 178*, 426-444. doi: <https://doi.org/10.1016/j.atmosres.2016.04.011>.

Amengual, A., Carrió, D. S., Ravazzani, G., i Homar, V. (2017). A comparison of ensemble strategies for flash flood forecasting: the 12 October 2007 case study in Valencia, Spain. *Journal of hydrometeorology, 18(4)*, 1143-1166. doi: <https://doi.org/10.1175/JHM-D-16-0281.1>.

Carrió, D. S., Homar, V., Jansa, A., Romero, R., i Picornell, M. A. (2017). Tropicalization process of the 7 November 2014 Mediterranean cyclone: numerical sensitivity study. *Atmospheric research, 197*, 300-312. doi: <https://doi.org/10.1016/j.atmosres.2017.07.018>

Carrió, D. S., Homar, V., i Wheatley, D. M. (2019). Potential of an EnKF storm-scale data assimilation system over sparse observation regions with complex orography. *Atmospheric research, 216*, 186-206. doi: <https://doi.org/10.1016/j.atmosres.2018.10.004>.

Any de defensa	Doctorand/a	Títol de la tesi
2020	Maria Esther Capó Truyols	Submesoscale dynamics in the western Mediterranean sea

Contribucions científiques derivades:

Capó, E., Orfila, A., Sayol, J. M., Juza, M., Sotillo, M. G., Conti, D., i Simarro, G. (2016). Assessment of operational models in the Balearic sea during a MEDESS-4MS experiment. *Deep sea research. Part II: topical studies in oceanography 133*, 118-131.

Sotillo, M., Orfila, A., Rodríguez-Rubio, P., Maraver, C., Conti, J., Padorno, D., Jiménez, E., Capó, J. A., Pérez, E., Sayol, F., de Los Santos, J. M., Amo, F. J., Rietz, A., Troupin, A., Tintoré, C., Álvarez-Fanjul, E. (2016). The MEDESS-GIB database: tracking the Atlantic water inflow earth. *System Science Data 8*, 141-149.

Capó, E., Orfila, A., Mason, E., Ruiz, S. (2019). Energy conversion routes in the Western Mediterranean sea estimated from eddy–mean flow interactions. *Journal of physical oceanography 49 (1)*, 247-267.

Línia de recerca: física de materials i aplicacions a l'enginyeria

Any de defensa	Doctorand/a	Títol de la tesi
2016	Beatriz Rosselló Batle	Análisis de la energía consumida y las emisiones de CO_2 durante el ciclo de vida de edificios del sector terciario y residencial situados en las Islas Baleares

Contribucions científiques derivades:

Rosselló Batle, B., Ribas, C., Moià Pol, A., i Martínez Moll, V. (2015). An assessment of the relationship between embodied and thermal energy demands in dwellings in a Mediterranean climate. *Energy and buildings*, *109*, 230-244. doi: <https://doi.org/10.1016/j.enbuild.2015.10.007>.

Rossello Batle, B., Ribas, C., Moià Pol, A., i Martínez Moll, V. (2015). Saving potential for embodied energy and CO_2 emissions from building elements: a case study. *Journal of building physics*, *39*(3), 261-284. doi: <https://doi.org/10.1177/1744259114543982>.

Rosselló Batle, B., Moià, A., Cladera, A., i Martínez, V. (2010). Energy use, CO_2 emissions and waste throughout the life cycle of a sample of hotels in the Balearic Islands. *Energy and buildings*, *42*(4), 547-558. doi: <https://doi.org/10.1016/j.enbuild.2009.10.024>.

Any de defensa	Doctorand/a	Títol de la tesi
2019	Julian David Hertel	Study on the general applicability of the collector efficiency model to solar process heat collectors

Contribucions científiques derivades:

Hertel, J. D., Martínez Moll, V., i Pujol Nadal, R. (2015). Estimation of the influence of different incidence angle modifier models on the biaxial factorization

approach. *Energy conversion and management*, *106*, 249-259. doi: <https://doi.org/10.1016/j.enconman.2015.08.082>.

Hertel, J. D., Martínez Moll, V., i Pujol Nadal, R. (2016). Influence of thermal losses on the incidence angle modifier factorization approach. *Solar energy, 135*, 50-58. doi: <https://doi.org/10.1016/j.solener.2016.05.035>.

Hertel, J. D., Bonnín Ripoll, F., Martínez Moll, V., i Pujol Nadal, R. (2018). Incidence-angle-and wavelength-resolved ray-tracing simulations of a linear Fresnel collector using the in-house software OTSun. *Journal of solar energy engineering, 140(3)*. doi: <https://doi.org/10.1115/1.4039329>.

Any de defensa	Doctorand/a	Títol de la tesi
2019	Nicolás Pérez de la Mora	Generation and supply optimisation of a power plant and DHC network

Contribucions científiques derivades:

Pérez de la Mora, N., Lazzeroni, P., Martínez Moll, V., i Repetto, M. (2017). Optimal management of a complex DHC plant. *Energy conversion and management, 145*, 386-397. doi: <https://doi.org/10.1016/j.enconman.2017.05.002>.

Pérez de la Mora, N., Bava, F., Andersen, M., Bales, C., Lennermo, G., Nielsen, C., i Martínez Moll, V. (2018). Solar district heating and cooling: a review. *International journal of energy research, 42(4),* 1419-1441. doi: <https://doi.org/10.1002/er.3888>.

Pérez de la Mora, N., Lazzeroni, P., Martínez Moll, V., i Repetto, M. (2018). Optimal DHC energy supply harnessing its thermal mass. *Applied thermal engineering, 133*, 520-531. doi: <https://doi.org/10.1016/j.applthermaleng.2018.01.072>.

Any de defensa	Doctorand/a	Títol de la tesi
2019	Joan Maria Rius Gibert	Active shear strengthening of reinforced concrete beams using Ni-Ti-Nb shape memory alloys

Contribucions científiques derivades:

Rius, J. M., Cladera, A., Ribas, C., i Mas, B. (2019). Shear strengthening of reinforced concrete beams using shape memory alloys. *Construction and building materials, 200*, 420-435. doi: <https://doi.org/10.1016/j.conbuildmat.2018.12.104>.

ES2592554 (B1) Cladera Bohigas, A., Ribas González, C. R., Mas Gràcia, B., i Rius Gibert, J. M. (2016). *Método de refuerzo activo frente a esfuerzo cortante o punzonamiento en elementos portantes estructurales, y sistema de refuerzo activo*. Espanya, Universitat de les Illes Balears. Patent: <https://patents.google.com/patent/ES2592554A1>.

Línia de recerca: Física Quàntica i Física Estadística

Any de defensa	Doctorand/a	Títol de la tesi
2017	Maria Isabel Alomar Bennàssar	Spin and charge transport in thermally and ac driven nanodevices

Contribucions científiques derivades:

Alomar, M. A., Lim, J. S., i Sánchez, D. (2016). Coulomb-blockade effect in nonlinear mesoscopic capacitors. *Phys. Rev. B 94*, 165425. doi: 10.1103/PhysRevB.94.165425.

Alomar, M. A., Serra, Ll., i Sánchez, D. (2016). Interplay between resonant tunneling and spin precession oscillations in all-electric all-semiconductor spin transistors. *Phys. Rev. B 94*, 075402. doi: <https://doi.org/10.1103/PhysRevB 94.075402>.

Alomar, M. A., Serra, Ll., i Sánchez, D. (2015). Seebeck effects in two-dimensional spin transistors. *Phys. Rev. B 91*, 075418. doi: <https://doi.org/10.1103/PhysRevB.91.075418>.

Alomar, M. A. i Sánchez, D. (2014). Thermoelectric effects in graphene with local spin-orbit interaction. *Phys. Rev. B 89*, 115422. doi: <https://doi.org/10.1103/PhysRevB.89.115422>.

Any de defensa	Doctorand/a	Títol de la tesi
2019	Guillem Rosselló Rosselló	Heat and charge transport in nanostructures: interference, AC-driving, environment, and feedback

Contribucions científiques derivades:

Rosselló, G., Battista, F., Moskalets, Michael., i Splettstoesser, J. (2015). Interference and multiparticle effects in a Mach-Zehnder interferometer with single-particle

sources. *Physical Review B 91 (11)*, 115438. doi: <https://doi.org/10.1103/PhysRevB.91.115438>.

Rosselló, G., López, R., i Sánchez, R. (2017). Dynamical coulomb blockade of thermal transport. *Physical Review B 95 (23),* 235404. doi: <https://doi.org/10.1103/PhysRevB.95.235404>.

Rosselló, G., López, R., i Lim, J. S. (2015). Time-dependent heat flow in interacting quantum conductors. *Physical Review B 92 (11),* 115402. doi: <https://doi.org/10.1103/PhysRevB.92.115402>.

Rosselló, G., López R., i Platero, G. (2017). Chiral Maxwell demon in a quantum hall system with a localized impurity. *Physical Review B 96 (7),* 075305. doi: <https://doi.org/10.1103/PhysRevB.96.075305>.

Any de defensa	Doctorand/a	Títol de la tesi
2019	Miguel Ambrosio Sierra Seco de Herrera	Electrically and thermally driven transport in interacting quantum dot structures

Contribucions científiques derivades:

Sierra, M. A. i Sánchez, D. (2014). Strongly nonlinear thermovoltage and heat dissipation in interacting quantum dots. *Phys. Rev. B 90,* 115313. doi: <https://doi.org/10.1103/PhysRevB.90.115313>.

Sierra, M. A., López, R., i Sánchez, D. (2017). Fate of the spin-1/2 kondo effect in the presence of temperature gradients. *Phys. Rev. B 96*, 085416. doi: <https://doi.org/10.1103/PhysRevB.96.085416>.

Sierra, M. A. i Sánchez, D. (2015). Nonlinear heat conduction in coulomb-blockaded quantum dots. *Materials Today: Proceedings 2*, 483. doi: <https://doi.org/10.1016/j.matpr.2015.05.066>.

Sierra, M. A., Saiz-Bretin, M., Domínguez-Adame, F., i Sánchez, D. (2016). Interactions and thermoelectric effects in a parallel-coupled double quantum dot. *Phys. Rev. B 93*, 235452. doi: <https://doi.org/10.1103/PhysRevB.93.235452>.

Sierra, M. A. i Sánchez, D. (2017). Heat current through an artificial kondo impurity beyond linear response. *J. Phys.: Conf. Ser. 969*, 012144. doi: 10.1088/1742-6596/969/1/012144.

Sierra, M. A., Sánchez, D., Garrigues, A. R., del Barco, E., Wang, L., i Nijhuis, C. A. (2018). How to distinguish between interacting and noninteracting molecules in tunnel junctions. *Nanoscale 10,* 3904. doi: 10.1039/C7NR05739C.

Sierra, M. Á., López, R., i Lim, J. S. (2018). A thermally driven out-of-equilibrium two-impurity kondo system. *Phys. Rev. Lett. 121*, 096801. doi: <https://doi.org/10.1103/PhysRevLett.121.096801>.

Sierra, M. A., Sánchez, D., Jauho, Antti-Pekka., i Kassbjerg, K.(2009). Fluctuation-driven coulomb drag in interacting quantum dot systems. *Phys. Rev. B 100*, 081404. doi: <https://doi.org/10.1103/PhysRevB.100.081404>.

Sierra, M. A., Sánchez, D., Gutiérrez, R., Cuniberti, G., Domínguez Adame, F., i Díaz, E. (2020). Spin-polarized electron transmission in DNA-like systems. *Biomolecules 10,* 49. doi: <https://doi.org/10.3390/biom10010049>.

Any de defensa	Doctorand/a	Títol de la tesi
2020	Daniel Chaparro González	Study of the generation of optical pulses by mode-locking in semiconductor lasers for applications in LiDAR systems

Contribucions científiques derivades:

Chaparro, D. i Balle, S. (2018). Optical addressing ofp in a semiconductor-based figure-of-eight fiber laser. *Physical Review Letters, 120*, 064101. doi: 10.1103/PhysRevLett.120.064101.

Chaparro, D., Furfaro, L., i Balle, S. (2017). «247 fs time-localized structures from a passively mode-locked figure-of-eight semiconductor laser». Conference on lasers and electro-optics Europe i European Quantum Electronics Conference (CLEO/Europe-EQEC). doi: 10.1109/CLEOE-EQEC.2017.8087528.

Chaparro, D., Furfaro, L., i Balle, S. (2017). Subpicosecond pulses in a selfstarting mode-locked semiconductor-based figure-of-eight fiber laser. *Photonics research 5*, 37-40. doi: 10.1364/PRJ.5.000037.

Marconi, M., Camelin, P., Barland, S., Giudici, M., Javaloyes, J., Chaparro, D., i Balle, S. (2015). Temporal localized states in semiconductors (II): from mode-locking to localized pulses. *Spatiotemporal complexity in nonlinear optics (SCNO)*. doi: 10.1109/SCNO.2015.7324011.

Marconi, M., Camelin, S., Giudici, M., Javaloyes, Chaparro, D., i Balle, S. (2016). Localized pulses in passively mode-locked semiconductor lasers. *Photonics North (PN)*. doi: 10.1109/PN.2016.7537880,

Marconi, M., Javaloyes, J., Camelin, P., González, D. C., Balle, S., i Giudici (2015). Control and generation of localized pulses in passively mode-locked semiconductor lasers. *IEEE Journal of selected topics in quantum electronics, 21*, 30. doi: 10.1109/JSTQE.2015.2435895.

Línia de recerca: Física Interdisciplinària i Física no Lineal

Any de defensa	Doctorand/a	Títol de la tesi
2018	Eder Batista Tchawou Tchuisseu	Complex dynamics in power grids

Contribucions científiques derivades:

Tchuisseu, E. T., Gomila, D., Brunner, D., i Colet, P. (2017). Effects of dynamic-demand-control appliances on the power grid frequency. *Physical Review E, 96(2),* 022302. doi: <https://doi.org/10.1103/PhysRevE.96.022302>.

Tchuisseu, E. B. T., Gomila, D., Colet, P., Witthaut, D., Timme, M., i Schäfer, B. (2018). Curing Braess' paradox by secondary control in power grids. *New journal of physics, 20(8),* 083005. doi: <https://doi.org/10.1088/1367-2630/aad490>.

Tchuisseu, E. T., Gomila, D., i Colet, P. (2019). Reduction of power grid fluctuations by communication between smart devices. *International journal of electrical power & energy systems, 108,* 145-152. doi: <https://doi.org/10.1016/j.ijepes.2019.01.004>.

Any de defensa	Doctorand/a	Títol de la tesi
2019	Julián Bueno Moragues	Photonic information processing

Contribucions científiques derivades:

Bueno, J., Brunner, D., Soriano, M. C., i Fischer, I. (2017). Conditions for reservoir computing performance using semiconductor lasers with delayed optical feedback. *Optics express, 25(3),* 2401-2412. doi: <https://doi.org/10.1364/OE.25.002401>.

Bueno, J., Maktoobi, S., Froehly, L., Fischer, I., Jacquot, M., Larger, L., i Brunner, D. (2018). Reinforcement learning in a large-scale photonic recurrent neural network. *Optica, 5(6),* 756-760. doi: <https://doi.org/10.1364/OPTICA.5.000756>.

Argyris, A., Bueno, J., i Fischer, I. (2018). Photonic machine learning implementation for signal recovery in optical communications. *Scientific reports, 8(1),* 1-13. doi: <https://doi.org/10.1038/s41598-018-26927-y>.

Línia de recerca: Física de Sistemes Complexos

Any de defensa	Doctorand/a	Títol de la tesi
2018	Jorge Pablo Rodríguez García	The complexity of movement: empirical data analysis and modelling of dynamical processes

Contribucions científiques derivades:

Rodríguez, J. P., Fernández-Gracia, J., Thums, M., Hindell, M. A., Sequeira, A. M. M., Meekan, M. G., Costa, D. P., Guinet, C., Harcourt, R. G., McMahon, C. R., Muel bert, M., Duarte, C. M., i Eguíluz V. M. (2017). Big data analyses reveal patterns and drivers of the movements of southern elephant seals. *Scientific Reports, 7(1):* 112.

Rodríguez, J. P., Ghanbarnejad, F., i Eguíluz, V. M. (2017). Risk of coinfection outbreaks in temporal networks: a case study of a hospital contact network. *Frontiers in physics, 5:* 46.

Rodríguez, J. P., Liang, Y. H., Huang, Y. J., i Juang, J. (2018). Diversity of hysteresis in a fully cooperative coinfection model. *Chaos, 28(2):*023107.

Sequeira, A. M. M. et al. (2018). Convergence of marine megafauna movement patterns in coastal and open oceans. *Proceedings of the National Academy of Sciences, 115(12)*:3072-3077.

Any de defensa	Doctorand/a	Títol de la tesi
2019	Pedro Monroy Pérez	Lagrangian studies of sedimentation and transport. Impact on marine ecosystems

Contribucions científiques derivades:

Monroy, P., Drotos, G., Hernández García, E., i López, C. (2019). Spatial inhomogeneities in the sedimentation of biogenic particles in ocean flows: analysis in the Benguela region. *Journal of geophysical research: oceans*, *124*(7), 4744-4762. doi: <https://doi.org/10.1029/2019JC015016>.

Hidalgo, M., Rossi, V., Monroy, P., Ser-Giacomi, E., Hernández García, E., Guijarro, B., i Reglero, P. (2019). Accounting for ocean connectivity and hydroclimate in fish recruitment fluctuations within transboundary metapopulations. *Ecological applications*, *29*(5), e01913. doi: <**https://doi.org/10.1002/eap.1913>.**

Drótos, G., Monroy, P., Hernández García, E., i López, C. (2019). Inhomogeneities and caustics in the sedimentation of noninertial particles in incompressible flows. *Chaos: an interdisciplinary journal of nonlinear science*, *29*(1), 013115. doi: <https://doi.org/10.1063/1.5024356>.

Monroy, P., Hernández García, E., Rossi, V., i López, C. (2016). Modeling the dynamical sinking of biogenic particles in oceanic flow. *arXiv preprint arXiv:1612.04592*.

Monroy, P., Rossi, V., Ser Giacomi, E., López, C., i Hernández García, E. (2017). Sensitivity and robustness of larval connectivity diagnostics obtained from Lagrangian Flow Networks. *ICES journal of marine science*, *74*(6), 1763-1779. doi: <https://doi.org/10.1093/icesjms/fsw235>.

Any de defensa	Doctorand/a	Títol de la tesi
2019	Daniel Ruiz Reynés	Dynamics of *Posidonia oceanica* meadows

Contribucions científiques derivades:

Ruiz-Reynés, D., Gomila, D., Sintes, T., Hernández García, E., Marbà, N., i Duarte, C. M. (2017). Fairy circle landscapes under the sea. *Science advances, 3(8),* e1603262. doi: <https://doi.org/10.1126/sciadv.1603262>.

Ruiz Reynés, D., i Gomila, D. (2019). Distribution of growth directions in meadows of clonal plants. *Physical Review E, 100(5),* 052208. doi: <https://doi.org/10.1103/PhysRevE.100.052208>.

Ruiz Reynés, D., Schönsberg, F., Hernández García, E., i Gomila, D. (2019). A simple model for pattern formation in clonal-growth plants. *arXiv preprint arXiv:1908*, 04603. <https://arxiv.org/abs/1908.04603>.

Any de defensa	Doctorand/a	Títol de la tesi
2019	Aleix Bassolas Esteban	A journey across the multiple scales of human mobility

Contribucions científiques derivades:

Lenormand, M., Bassolas, A., i Ramasco, J. J. (2016). Systematic comparison of trip distribution laws and models. *Journal of transport geography, 51,* 158-169. doi: https://doi.org/10.1016/j.jtrangeo.2015.12.008

Bassolas, A., Lenormand, M., Tugores, A., Gonçalves, B., i Ramasco, J. J. (2016). Touristic site attractiveness seen through Twitter. *EPJ Data Science, 5(1),* 12. doi: <https://doi.org/10.1140/epjds/s13688-016-0073-5>.

Bassolas, A., Ramasco, J. J., Herranz, R., i Cantú-Ros, O. G. (2019). Mobile phone records to feed activity-based travel demand models: MATSim for studying a cordon toll policy in Barcelona. *Transportation research. Part A: policy and practice, 121,* 56-74. doi: <https://doi.org/10.1016/j.tra.2018.12.024>.

Mazzoli, M., Molas, A., Bassolas, A., Lenormand, M., Colet, P., i Ramasco, J. J. (2019). Field theory for recurrent mobility. *Nature communications, 10(1),* 1-10. doi: <https://doi.org/10.1038/s41467-019-11841-2>.

Bassolas, A., Barbosa-Filho, H., Dickinson, B., Dotiwalla, X., Eastham, P., Gallotti, R., i Kucuktunc, O. (2019). Hierarchical organization of urban mobility and its connection with city livability. *Nature communications, 10(1),* 1-10. doi: <https://doi.org/10.1038/s41467-019-12809-y>.

Bassolas, A., Gallotti, R., Lamanna, F., Lenormand, M., i Ramasco, J. J. (2020). Scaling in the recovery of urban transportation systems from massive events. *Scientific reports, 10(1)*, 1-13. doi: <https://doi.org/10.1038/s41598-020-59576-1>.