Jorge P. Rodríguez

Contact: jorgeprodriguezg@gmail.com

Postdoctoral researcher, Instituto de Física Interdisciplinar y Sistemas Complejos (IFISC),

CSIC-UIB, Palma (Mallorca), Spain

1. Keywords

Big data, complex networks, animal movement, marine megafauna, disease spreading

2. Professional positions

2014-2018 PhD researcher. Formación de Profesorado Universitario (FPU) fellowship, Spanish Ministry of Education, Culture and Sport. Instituto de Física Interdisciplinar y Sistemas Complejos IFISC (CSIC-UIB), Palma (Mallorca), Spain

2018-2019 Postdoctoral researcher. Funding from project Coupled Animal and Artificial Sensing for Sustainable Ecosystems (CAASE). IFISC (CSIC-UIB), Palma (Mallorca), Spain

2019-2020 Postdoctoral researcher. Sociopatterns collaboration. ISI Foundation, Turin, Italy

2020- Tutoring lecturer. Associated center in Balearic Islands, National Distance University UNED, Palma (Mallorca), Spain

2020-2021 Postdoctoral researcher. Instituto de Biocomputación y Física de Sistemas Complejos BIFI, Universidad de Zaragoza, Spain

2021-2023 Postdoctoral fellow. Juan de la Cierva Formación fellowship, Spanish Ministry of Science and Innovation. Instituto Mediterráneo de Estudios Avanzados (CSIC-UIB), Esporles (Mallorca), Spain

2023- Postdoctoral researcher/fellow. Projects Artificial Intelligence & Animal Movement (AIAM) and Modelling Island Ecological Complexity in the Context of Global Change (MISLAND), and Vicenç Mut fellowship (Govern de les Illes Balears). Instituto de Física Interdisciplinar y Sistemas Complejos IFISC (CSIC-UIB), Palma (Mallorca), Spain

3. Academic qualifications

2018 PhD in Physics. University of Balearic Islands (Spain)

2014 Master's Degree in Physics of Complex Systems (60 ECTS). University of Balearic Islands(Spain)

2013 5-year Degree in Physics (300 ECTS). University of Valencia (Spain). Erasmus at Imperial College London (9 months, United Kingdom)

2018 Degree in Social and Cultural Anthropology (240 ECTS, 2018). National Distance Education University (Spain)

4. Funded research projects (PI)

2023 "Artificial Intelligence & Animal Movement (AIAM)". Mar 2023-Jan 2024, funded by Sustainable Ocean Alliance. Amount: 10,000 USD

5. Early-career researchers training

2022- Direction of Master Thesis (ongoing), Jorge Domínguez, Master's Degree in Advanced Physics, National Distance University (UNED), Spain

2021-2022 Co-direction of Master Thesis, Lina E. Navarro, Master's Degree in Physics of Complex Systems, University of Balearic Islands, Spain

6. Publications

2024 Rodríguez, J.P., Irigoien, X., Duarte, C.M., Eguíluz, V.M. Identification of suspicious behaviour through anomalies in the tracking data of fishing vessels. EPJ Data Science 13, 23.

2024 Rodríguez, J.P., Klemm, K., Duarte, C.M., Eguíluz, V.M. Shipping traffic through the Arctic Ocean: spatial distribution, temporal evolution and its dependence on the sea ice extent, arXiv preprint: https://arxiv.org/abs/2403.01856

2024 Rodríguez, J.P., Arola-Fernández, L. Understanding following patterns among high-performance athletes, arXiv preprint: https://arxiv.org/abs/2405.10798

2023 Belvís, F., Aleta, A., Pericas, J.M., Fernández-Gracia, J., Rodríguez, J.P., et al. Key epidemiological indicators and spatial autocorrelation patterns across five waves of COVID-19 in Catalonia. Scientific Reports 13, 9709

2023 Rodríguez, J.P., Eguíluz, V.M. Coupling between infectious diseases leads to synchronization of their dynamics. Chaos 33, 021103

2023 Rodríguez, J.P., Aleta, A., Moreno, Y. Digital cities and the spread of COVID-19: characterizing the impact of non-pharmaceutical interventions in five cities in Spain. Frontiers in Public Health 11, 1122230

2022 Rodríguez, J.P., Paoluzzi, M., Levis, D., Starnini, M. Epidemic processes on self-propelled particles: Continuum and agent-based modeling. Physical Review Research 4, 043160

2022 Lacasa, L., Rodríguez, J.P., Eguíluz, V.M. Correlations of network trajectories. Physical Review Research 4, L042008

2021 Bates, A.E., et al. Global COVID-19 lockdown highlights humans as both threats and custodians of the environment. Biological Conservation 263,109175

2021 Calich, H., Rodríguez, J.P., Eguíluz, V.M., Hammerschlag, N., *et al*. Comprehensive analytical approaches reveal species-specific search strategies in sympatric apex predatory sharks. Ecography 44, 1544

2021 Ozella, L., Paolotti, D., Lichand, G., Rodríguez, J.P., Haenni, S., *et al*. Using wearable proximity sensors to characterize contact patterns in a village of rural Malawi. EPJ Data Science 10, 46

2021 Rodríguez, J.P., Ferndández-Gracia, J., Duarte, C.M., Irigoien, X., *et al*. The global network of ports supporting high seas fishing. Science Advances 7, eabe3470

2021 Kazimierski, L.D., Rodríguez, J.P., Eguíluz, V.M. Design of deployment strategies to monitor the movement of animals with passive electronic devices. Sensors 21, 236

2020 Eguíluz, V.M., Fernández-Gracia, J., Rodríguez, J.P., Pericas, J.M., Melián, C.M. Risk of

secondary infection waves of COVID-19 in an insular region: the case of the Balearic Islands, Spain. Frontiers in Medicine 7, 563455

2019 Sequeira, A.M.M., Hays, G.C., Sims, D.W., Eguíluz, V.M., Rodríguez, J.P., et al. Overhauling ocean spatial planning to improve marine megafauna conservation. Frontiers in Marine Science 6, 639

2019 Rodríguez, J.P., Ghanbarnejad, F., Eguíluz, V.M. Particle velocity controls phase transitions in contagion dynamics. Scientific Reports 9, 6463

2018 Melián, C.J., Matthews, B., de Andreazzi, C.S., Rodríguez, J.P., *et al.* Deciphering the interdependence between ecological and evolutionary networks. Trends in Ecology and Evolution 33, 504

2018 Sequeira, A.M.M., Rodríguez, J.P., Eguíluz, V.M., Harcourt, R.G., *et al*. Convergence of marine megafauna movement patterns in coastal and open oceans. Proceedings of the National Academy of Sciences 115, 3072

2018 Rodríguez, J.P., Liang, Y.H., Huang, Y.J., Juang, J. Diversity of hysteresis in a fully cooperative coinfection model. Chaos 28, 023107

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

2017 Rodríguez, J.P., Fernández-Gracia, J., Thums, M., Hindell, MA., *et al*. Big data analyses reveal patterns and drivers of the movements of southern elephant seals. Scientific Reports 7, 112

5. Citation Statistics

Number of citations: 560 (Google Scholar)
h-index: 10 (Google Scholar)

6. Reviewing activity for peer-review journals

Communications Physics, PLOS Computational Biology, Physical Review Research, PLOS ONE, JSTAT, Physical Review E, PeerJ, Chaos, Complexity, Entropy, Frontiers in Marine Science, Science Progess, Social Science Computer Review, Frontiers in Physics, Chaos, Solitons and Fractals, Frontiers in Public Health, Ecological Complexity

8. Awards

- 2nd National End-Of-Degree Award. Degree in Physics. Spanish Ministry of Education, Culture and Sport
- Selected photography “El árbol pendular” (The pendular tree) for national scientific photography exhibition, Fotciencia 14 (2017)

9. Conference presentations (oral communications)

2022 “Epidemic processes on self-propelled particles”. Conference on Complex Systems, CCS22, Palma (Spain)

2022 “Digital cities and COVID-19: modeling the impact of non pharmaceutical interventions”. International Conference BIFI (online)

2021 ”Fishing at the High Seas: the Global Network Connecting Ports to Fishing Areas”.

Conference on Complex Systems, CCS21, Lyon (France)

2021 ”Big Data analytics for marine movement tracking data: a global picture”. I Annual Meeting of the Spanish Tracking Network, Palma (Spain)

2021 ”The global network of ports supporting high seas fishing”. FisEs Joven ‘21 (online)

2019 “Structure and dynamics of contact patterns among structured populations in South Africa”. Conference on Complex Systems, CCS19, Singapore

2019 “Genome networks and the stability of diversification”. Conference on Complex Systems, CCS19, Singapore

2018 “Cooperative disease spreading in networks of mobile particles: how mobility can speed up, slow down and change the nature of the epidemic phase transition”. Conference on Complex Systems, CCS18, Thessaloniki (Greece)

2018 “Inferring intraspecific tracing behaviour in animal movement”. Conference on Complex Systems, CCS18, Tessaloniki (Greece)

2017 “Coinfection in the space: cooperative disease spreading in geometric and contact networks”. COSTNET17 (Palma de Mallorca)

2017 “Cooperative spreading diseases in temporal networks”. 8th Conference on Complex Networks, CompleNet’17, Dubrovnik (Croatia)

10. Stays in Research centers

2018 Indian Ocean Marine Research Centre, University of Western Australia (Australia). Research stay with Dr. Ana Sequeira.

2018 Department of Engineering Mathematics, University of Bristol (United Kingdom). Research stay with Dr. Naoki Masuda. Funding: COSTNET (EU COST Action)

2016-2017 Eawag (Switzerland). Research stays with Dr. Carlos Melián. Funding (2016): Obra Social la Caixa

2016 National Chiao-Tung University (Taiwan). Research stay with Prof. Jonq Juang. Funding: Ministry of Science and Technology of Taiwan

2016 University of Western Australia (Australia). Research stay with Dr. Ana Sequeira