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## Employment

### ***Postdoctoral Research Fellow in Complex Networks***

Institute for Sustainable Resources,  
The Bartlett School of Environment, Energy and Resources,  
University College London.

2023 - Present

### ***Visiting Postdoctoral Research Associate***

Complex Systems Group,  
School of Mathematical Sciences, Queen Mary University of London.

2020 - 2022

### ***Postdoctoral Research Fellow***

Department of Mathematics,  
Nanyang Technological University, Singapore.

2019 - 2020

### ***Postdoctoral Research Associate***

Geometry, Analysis and Theoretical Physics Group,  
Max Plank Institute for Mathematics in the Sciences,  
Leipzig, Germany.

2018

### ***Visiting Postdoctoral Research Associate***

Complex Systems Group,  
School of Mathematical Sciences, Queen Mary University of London.

2017 - 2018

### ***Postdoctoral Research Fellow***

Wireless Systems Laboratory,  
Department of Electronic Engineering, Hanyang University,  
Seoul, South Korea.

2016 - 2017

### ***Postdoctoral Research Associate***

Applied Mathematics Group,  
School of Mathematics, University of Bristol.

2015 - 2016

## Education

***Doctor of Philosophy***, Mathematics/Communications Engineering,  
EPSRC Centre for Doctoral Training in Communications, University of Bristol,

2011 - 2017

Thesis "*Connectivity and centrality in dense random geometric graphs*"

Supervised by Professor Carl P. Dettmann,  
external examination by Professor Vito Latora and Professor Mason A. Porter.

**MSci, Physics** (Upper Second Class with Honours)  
University of Bristol,  
Bristol, United Kingdom.  
Dissertation "*Magnetic monopoles in spin ice*".

2007 - 2011

## Publications

which have been accepted, or which have appeared, or which are being prepared,

- A. P. Kartun-Giles and V. Nicosia, "*Do fireflies prefer hyperbolic bushes?*", in preparation, 2022.
- A. P. Kartun-Giles and Kostas Koufos, "*Sharp transitions for path existence in the random connection model*", in preparation, 2022.
- A. P. Kartun-Giles, Kostas Koufos, "*Connectivity of 1d random geometric graphs*", RSA, submitted, 2022.
- A. P. Kartun-Giles, Kostas Koufos, Dusit Nyato, Sean Lu, "*Two-hop connectivity to the roadside in a VANET under the random connection model*", IEEE Transactions on Vehicular Technology, Submitted, 2022.
- A. P. Kartun-Giles, Kostas Koufos, Sunwoo Kim, "*Meta distribution of SIR in ultra-dense networks with bipartite euclidean matchings*", IEEE International Conference on Communications, Seoul, 2022.
- A. P. Kartun-Giles and G. Bianconi, "*Beyond the clustering coefficient: A topological analysis of node neighbourhoods in complex networks*", Chaos, Solitons and Fractals: X, Volume 1(1), 2019.
- A. P. Kartun-Giles, M. Barthelemy and C. P. Dettmann, "*The shape of shortest paths in random spatial networks*", Physical Review E, Volume 100, 032315, 2019.
- A. P. Kartun-Giles, D. Krioukov, J. P. Gleeson, Y. Moreno, G. Bianconi, "*Sparse power-law network model for reliable statistical predictions based on sampled data*", Entropy: Special Issue on Graph and Network Entropies, Volume 20, Issue 4, 2018.
- A. P. Kartun-Giles and S. Kim, "*Counting k-hop paths in the random connection model*", IEEE Transactions on Wireless Communications, Volume 17, Issue 5, 2018.
- A. P. Kartun-Giles, S. Jayaprakasam and S. Kim, "*Euclidean matchings in ultra-dense networks*", IEEE Communications Letters, Volume 22, Issue 6, 2018.
- G. Knight, A. P. Kartun-Giles, O. Georgiou, and C. P. Dettmann, "*Counting geodesic paths in 1D VANETs*", IEEE Wireless Communications Letters, Volume 6, Number 1, pp. 110-113, January 2016.
- A. P. Giles, O. Georgiou, and C. P. Dettmann, "*Betweenness centrality in dense random geometric networks*", Proceedings of the IEEE International Conference on Communications, London, UK, 2015.
- A. P. Giles, O. Georgiou, and C. P. Dettmann, "*Connectivity of soft random geometric graphs over annuli*", Journal of Statistical Physics, Volume 162, Issue 4, pp 1068-1083, January 2016.

## Research Funding

as principal investigator,

- EPSRC Institutional Grant, University of Bristol.  
*“Random Walks on Random Geometric Networks”*,  
collaborative with C. P. Dettmann, M. D. Penrose, £31,500, 2015 - 2016.

## Conference Organisation

as organiser and co-organiser,

- *“Random walks on random networks”* at the British Mathematical Colloquium 2016.  
Contributed talks inc. Nathanaël Berestycki, Márton Balzás, Mathew Penrose, and Gourab Ray.
- *“Modelling transport infrastructure: Connected autonomous vehicles and resilience”* under the EN-CORE project based at the University of Sheffield, 2017.
- *“Mathematics of autonomous vehicles”*, GW4 Initiator Fund, one-day meeting 2016, (applied, unfunded).

## Editorial Duties

- **Editorial Board of Wireless Communications**, Journal of Frontiers in Communications, 2020-Present.

## Supervision of Research Students

- **Esme Weil**, Bachelor’s Thesis, University of Manchester, “O-minimal structures”. Private tutor, 2022.
- **Michael Wilshere**, PhD Student University of Bristol, “1d random geometric graphs”, informal advisor, 2018-2021.

## Teaching Employment

- **Undergraduate group tutorials** (1st year), Mathematics undergraduate, University of Bristol, 2016
- **Statistical mechanics** (3rd/4th year), University of Bristol, teaching assistant, 2015.
- **Engineering mathematics** (2nd year), University of Bristol, teaching assistant, 2014.
- **Private tutoring** (12 years, around 2000 hours), including A level and university students in mathematics, physics, engineering and computer science.

## Conference Talks

selected,

- **Mathematical physics seminar**, University of Arizona, invited speaker *“Shape of shortest paths in random spatial networks”*., 2021.
- **Spatially Embedded Networks**, Bristol University, *“Topological analysis of node neighbourhoods in complex networks”*, 2018

- **Mathematics of Networks (MoN16)**, University of Sussex, “*Euclidean matchings in ultra-dense spatial communication networks*”, 2017
- **Spatially Embedded Networks**, Oriel College, Oxford University, “*Path counting in the random connection model*”, 2016
- **Pure mathematics seminar**, University of Bristol, “*Random geometric graphs*”. 2016.
- **Cambridge Networks Day**, University of Cambridge, “*Random geometric graphs in non-convex domains*”, 2014
- **Student Conference on Complexity Science**, University of Sussex (Session chair, invited speaker, “*Random geometric graphs in non-convex domains*”, 2014.