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Maxime Lucas

Current position

June 2017– **Postdoctoral Researcher**, *Aix-Marseille University*, Marseille, France.

PhD Thesis

Title — *Synchronisation and stability in nonautonomous oscillatory systems*

Supervisors — Pr. Aneta Stefanovska and Pr. Duccio Fanelli

Institutions — Joint degree between Lancaster University, UK, and University of Florence, Italy

Description — This thesis investigates synchronisation and stability in driven systems and networks of coupled oscillators, with an eye on possible applications in biological and other real life systems.

Funding — COSMOS, a Marie Curie Initial Training Network (ITN) of the type European Joint Doctorate (EJD).

Dates — October 2015–February 2019

Education

2014–2015 **Master of Artificial Intelligence**, *Katholieke Universiteit Leuven*, Leuven, Belgium, *cum laude*.

2012–2014 **MSc Physics**, *Université Libre de Bruxelles*, Brussels, Belgium, *magna cum laude*.

2012 **One-term exchange programme**, *University of Toronto*, Toronto, Canada.

2009–2012 **BSc Physics**, *Université Libre de Bruxelles*, Brussels, Belgium, *cum laude*.

Publications

1. Newman, J., Lucas, M. & Stefanovska, A. *Limitations of the asymptotic approach to dynamics* Submitted, preprint at arXiv:1810.04071. (2019).

2. Lucas, M., Fanelli, D. & Stefanovska, A. Nonautonomous driving induces stability in network of identical oscillators. *Phys. Rev. E* **99,** 012309 (2019).

3. Lucas, M., Fanelli, D., Carletti, T. & Petit, J. Desynchronization induced by time-varying network. *Europhys. Lett.* **121,** 50008 (2018).

4. Lucas, M., Newman, J. & Stefanovska, A. Stabilization of dynamics of oscillatory systems by nonautonomous perturbation. *Phys. Rev. E* **97,** 042209 (2018).

5. Duncan, R. & Lucas, M.. Verifying the Steane code with Quantomatic. *Electronic Proceedings in Theoretical Computer Science* **171,** 33–49 (2014).

Presentations

Oral at conferences, workshops, and schools

2019 **Belgian Network Research Meeting (BeNet)**, Hasselt, Belgium, 22 February.

2018 **COSMOS meeting**, Dolenjske Toplice, Slovenia, 24–27 September.

2018 **Workshop on Long-range Interactions and Synchronization**, São Paulo, Brazil, 28–31 June.

2017 **COSMOS toolbox laboratory**, Brijuni, Croatia, 8–13 October.

2017 **Dynamics Days**, Szeged, Hungary, 5–9 June.

2017 **COSMOS retreat**, Wittenberg, Germany, 26–31 March.

2016 **COSMOS workshop 2**, Amsterdam, Netherlands, 11–16 December.

2016 **COSMOS school 2**, Aberdeen, UK, 27 June–6 July.

2013 **Quantum Physics and Logic (QPL) workshop**, Barcelona, Spain, 17–19 July.

Seminars

2019 **Invited seminar at Department of Network and Data Science, Central European University**, Budapest, Hungary, 29 March.

2018 **Invited seminar at Université Libre de Bruxelles**, Brussels, Belgium, 3 April.

2017 **Invited seminar at University of Florence**, Florence, Italy, 7 December.

Posters

2019 **Complenet**, Tarragona, Spain, 18–21 March.

2018 **Analysis and Modeling of Complex Oscillatory Systems (AMCOS)**, Barcelona, Spain, 19–23 March.

2017 **STATPHYS26**, Lyon, France, 18–22 July.

2016 **International conference on biological oscillations (ESGCO)**, Lancaster, UK, 10–14 April.

2015 **Lancaster University Christmas Conference**, Lancaster, UK, 15 December.

Conference organisation and scientific committees

2018 **Co-organiser of the "Analysis and Modeling of Complex Oscillatory Systems" (AMCOS) conference**, *Barcelona, Spain*, international conference with about 100 participants, website: amcosconference.com.

Teaching and outreach

2017 **Interview for Radio Moka**, *Florence, Italy*, 17 November.

2017 **Masterclass "Waves and oscillations"**, *Lancaster University, UK*, 13 July, We hosted 30 A-level students within the programme Headstart from all over the UK.

2017 **Masterclass "Waves and oscillations"**, *Lancaster University, UK*, 1 March, We hosted 9 A-level students.

2010–2015 **Private tuitions in physics and maths**.

2014 **Teacher at Reussit'school**, *individual tuitions*.

Awards and grants

2019	**Travel grant**, *from COSTNET Short Term Scientific Mission (STSM).*
2018	**Best group project "Plan Bee"**, *at the Mediterranean School of Complex Networks (MSCx)*, Salina, Italy.
2015	**COSMOS PhD Fellowship**, *Marie Curie ITN EJD.*
2011	**Gold medal with the ULB-Brussels Team**, *at the international Genetically Engineerd Machine competition (iGEM) organised by MIT*, Amsterdam, Netherlands.

Administration

2015–2018	**Early Stage Researcher (ESR) representative**, on the Supervisory board of the COSMOS ITN.
2011–2012	**Student representative**, at the Physics Department, Université Libre de Bruxelles, Brussels, Belgium.

Service

Referee for	Philos. Trans. Royal Soc. A, PLOS ONE, Commun. Nonlinear Sci. Numer. Simul.

Computer skills

Languages	Python, Matlab, Fortran, Java, Prolog, LaTeX
OS	Windows, Linux
Other	LaTeX template for conference booklet: github.com/maximelucas/AMCOS_booklet

Languages

- French: mother tongue
- English: fluent (IELTS: 8/9 in 2015)
- Italian: advanced
- Dutch: advanced
- Hungarian: beginner

Interests

Music (play the violin), football, squash, hiking, former youth movements leader

References

Aneta Stefanovska, Professor.
Nonlinear and Biomedical Physics, Physics Department, Lancaster University, UK.
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Duccio Fanelli, Assoc. Professor.
CSDC, Departement of Physics and Astronomy, University of Florence, Florence, Italy.
Email: duccio.fanelli@unifi.it