# Curriculum Vitae - Sami Cameron Al-Izzi

School of Physics & ARC Centre for Excellence for the Mathematical Analysis of Cellular Systems
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Citizenship: British Citizen, Australian Permanent Resident

## Research Interests

Theory of Soft Matter, Theoretical Biophysics, Applied Mathematics, Fluid Dynamics, Elasticity Theory, Differential Geometry & Statistical Mechanics.

## Employment

05/2024 - Present **MACSYS Postdoctoral Fellow**
School of Physics & ARC Centre for Excellence for the Mathematical Analysis of Cellular Systems
UNSW Sydney
Advisor: Prof. Richard G. Morris

05/2023 - 05/2024 **Marie Skłodowska–Curie Postdoctoral Fellow**
Department of Mathematics, University of Oslo
Advisor: Prof. Andreas Carlson

01/2020 - 05/2023 **Postdoctoral Research Fellow**
School of Physics & EMBL-Australia Node in Single Molecule Science, UNSW Sydney
Advisor: Dr. Richard G. Morris

## Education

10/2016 - 10/2019 **University of Warwick & Institut Curie (Sorbonne Université)**
PhD - Mathematics of Systems
Thesis: Dynamics of lipid membrane tubes
Supervisors: Prof. Matthew S. Turner & Prof. Pierre Sens

10/2015 - 09/2016 **University of Warwick**
MSc - Mathematics of Systems

10/2013 - 07/2014 **University of Cambridge**
MASt - Mathematics Part III

10/2010 - 08/2013 **University College London**
BSc - Theoretical Physics

## Publications

11. Advecting scaffolds: controlling the remodelling of actomyosin with anillin - D. Currin-Ross, **S.C. Al-Izzi**, I. Noordstra, A. Yap & R.G. Morris - arXiv:2402.07430 (under review)

10. **S.C. Al-Izzi**, S. Ghanbarzadeh Nodehi, D.V. Köster & R.G. Morris - More ATP does not equal more contractility: power and remodelling in reconstituted actomyosin - arXiv:2108.00764 (under review)

9. M. Janssen, S. Liese, **S.C. Al-Izzi** & A. Carlson - Stability of a biomembrane tube covered with proteins - Physical Review E **109**, 044403 (2024)

8. C.F. Dickson, S. Hertel, N. Li, A. Tuckwell, J. Ruan, **S.C. Al-Izzi**, N. Ariotti, E. Sierecki, Y. Gambin, R.G. Morris, G.J. Towers, T. Böcking & D.A. Jacques - The HIV capsid mimics karyopherin engagement of FG-nucleoporins - Nature **626**, 836–842 (2024)

7. **S.C. Al-Izzi** & G.P. Alexander - Chiral active membranes: odd mechanics, spontaneous flows and shape instabilities - Physical Review Research **5**, 043227 (2023)

6. **S.C. Al-Izzi** & R.G. Morris - Morphodynamics of active nematic fluid surfaces - Journal of Fluid Mechanics **957** A4 (2023) - Selected for Focus on Fluids Editorial

5. **S.C. Al-Izzi** & R.G. Morris - Active flows and deformable surfaces in development - Seminars in Cell and Developmental Biology **120** 44-52 (2021)

4. **S.C. Al-Izzi**, P. Sens, M.S. Turner & S. Komura - Dynamics of passive and active membrane tubes - Soft Matter **16**, 9319 (2020)

3. P. Fonda, **S.C. Al-Izzi**, L. Giomi & M.S. Turner - Measuring Gaussian rigidity using curved substrates - Physical Review Letters **125**, 188002 (2020)

2. **S.C. Al-Izzi**, P. Sens & M.S. Turner - Shear-driven instabilities of membrane tubes and dynamin-induced scission - Physical Review Letters **125**, 018101 (2020)

1. **S.C. Al-Izzi**, G. Rowlands, P. Sens & M.S. Turner - Hydro-osmotic instabilities in active membrane tubes - Physical Review Letters **120**, 138102 (2018)

## Funding & Awards

- **Funding:** Marie Skłodowska–Curie Action European Postdoctoral Fellowship, EU Horizon Programme, 2022 (11.6% success rate in physics, total funding: €210911.03) • PoLNet2 funding in support of *Physics of Living Systems* • QJMAM grant to attend *Novel Physics of Living Systems in Roscoff*, Brittany 2019 • London Mathematical Society bursary to attend *British Applied Mathematics Colloquium* 2019 • IOP travel bursary to attend *PhysCell* 2018.

- **Prizes:** IOP poster prize *PhysCell* 2018 • SIAM poster prize *British Applied Mathematics Colloquium* 2017 • Deans List UCL Faculty of Mathematical & Physical Sciences 2013.

## Presentations

**Invited talks**

- Vector & Tensor-valued Surface PDEs - Technische Universität Dresden, Germany, 29$^{\text{th}}$ November - 1$^{\text{st}}$ December 2023.

- Emerging Concepts in Cell & Developmental Biology Meeting, Aarhus, Denmark 22$^{\text{nd}}$ September 2022.

**Contributed talks**

I have given talks at many international conferences including DPG/EPS Condensed matter meeting, British Applied Mathematics Colloquium, Future Directions in Active Matter (Nordita), Active and Intelligent Matter Meeting (Erice, Sicily), Soft and Complex Matter - Norwegian Academy of Science & Letters, Statistical Mechanics of Soft Matter, Australian Society for Biophysics Meeting and CECAM Emergent behaviour in active matter.

**Seminars**

In the last two years I have given seminars at University of Cambridge (DAMTP), Queensland University of Technology (Applied Math), University of Queensland (Applied Math), UNSW Syndey, University of Bath, UCSD (Virtual), Institut Curie and Durham University (Physics).

## Teaching

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| 2023 | **School of Chemistry, UNSW** |
| | Lecturer - *CHEM3061: Chemistry of Materials* - Soft matter section with Dr. Anna Wang |
| 2021 | **EMBL-Australia Node in Single Molecule Science, UNSW** |
| | Lecturer - *What Every Biologist Needs to Know About Physics* - Graduate course |
| 2018 - 2019 | **Department of Mathematics, University of Warwick** |
| | Teaching assistant for *Mathematics in Action* 4$^{\text{th}}$ Year Project |

## Supervision

- Denni Currin-Ross (Co-supervised with R.G. Morris and A. Yap) - Mechano-chemical Control of Cortical Flows in Epithelial Cells - 2021-Present

## Professional Activities & Outreach

- Organised minsymposium on "Shape and form in active materials" for the British Applied Mathematics Colloquium 2024 with Dr. Anton Souslov (Cambridge) & Dr. Jack Binysh (Amsterdam).

- Organizer of Theory of Living Systems in Australia and New Zealand Webinar series with Dr. R.G. Morris, Dr. E. Crosato & Prof. M. Stumpf (www.theoryoflivingsystems.org) (2020-2022).

- Reviewed for Soft Matter, Science Advances, Nature Communications, EPJE & Journal of the Mechanics and Physics of Solids.

- Organised conferences at University of Warwick entitled Physics of Living Systems, 20$^{\text{th}}$ September 2019 and Mechanics of Membranes: From Differential Geometry to Cell Transport, 2$^{\text{nd}}$ November 2018.

- Demonstrated Low-Reynolds number fluid mixing experiment for University of Warwick Physics Open Days.

## References

Available upon request.