

Curriculum Vitae - Sami Cameron Al-Izzi

Department of Mathematics - Division of Mechanics
Faculty of Mathematics and Natural Sciences
University of Oslo
0315 Oslo, Norway
email: samiali@uio.no
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

- 05/2023 - Present **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
- 10/2019 - 12/2019 **LabEx Transition Fellow**
UMR 168, Physico-Chimie Curie, Institut Curie
Advisor: Prof. Pierre Sens

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

10. M. Janssen, S. Liese, **S.C. Al-Izzi** & A. Carlson - Stability of a biomembrane tube covered with proteins - bioRxiv: 10.1101/2022.09.29.510025v2 (under review)
9. **S.C. Al-Izzi** & G.P. Alexander - A twist on active membranes: odd mechanics, spontaneous flows and shape instabilities - arXiv:2306.17767 (under review)
8. **S.C. Al-Izzi**, D.V. Köster & R.G. Morris - More ATP does not equal more contractility: power and remodelling in reconstituted actomyosin - arXiv:2108.00764 (under review)
7. C.F. Dickson, S. Hertel, J. Ruan, N. Ariotti, A. Tuckwell, N. Li, **S.C. Al-Izzi**, E. Sierrecki, Y. Gambin, R.G. Morris, G.J. Towers, T. Böcking & D.A. Jacques - Karyopherin mimicry explains how the HIV capsid penetrates nuclear pores - bioRxiv:10.1101/2023.03.23.534032 (under review)
6. **S.C. Al-Izzi** & R.G. Morris - Morphodynamics of active nematic fluid surfaces - Journal of Fluid Mechanics **957** A4 (2023)
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. P. Fonda, **S.C. Al-Izzi**, L. Giomi & M.S. Turner - Measuring Gaussian rigidity using curved substrates - Physical Review Letters **125**, 188002 (2020)
3. **S.C. Al-Izzi**, P. Sens, M.S. Turner & S. Komura - Dynamics of passive and active membrane tubes - Soft Matter **16**, 9319 (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)

In preparation

Anillin and contractile patterning in the actomyosin cortex - D. Currin-Ross, **S.C. Al-Izzi**, I. Noordstra, A. Yap & R.G. Morris

Understanding nuclear entry of HIV capsids: geometry, wetting and capillary forces - A.W. Brown, **S.C. Al-Izzi**, J.L. Parker, D.A. Jacques, R.G. Morris & H. Kusumaatmaja

Mixed Lagrangian-Eulerian objective rates for morphodynamics - **S.C. Al-Izzi** & R.G. Morris

Presentations

Invited talks

- Vector & Tensor-valued Surface PDEs - Technische Universität Dresden, Germany, 29th November - 1st December 2023.
- Emerging Concepts in Cell & Developmental Biology Meeting, Aarhus, Denmark 22nd September 2022.

Contributed talks

- British Applied Mathematics Colloquium, 3rd April 2023.
- Future Directions in Active Matter Meeting, Nordita - Stockholm, Sweden, 3rd August 2022.
- Active and Intelligent Matter Meeting, Erice, Sicily, 26th June - 1st July 2022.
- Statistical Mechanics of Soft Matter Meeting 14th-15th December 2020.
- Australian Society for Biophysics Meeting, 2nd-4th December 2020.
- CECAM Emergent behaviour in active matter: computational challenges 27th-29th June 2019.
- British Applied Mathematics Colloquium, University of Bath 24th-26th April 2019.
- Physics Day, University of Warwick, 2nd November 2018.
- DPG/EPS Condensed matter division meeting, Berlin, 11th-16th March, 2018.

Seminars

- Applied Mathematics, Queensland University of Technology 21st March 2023.
- Applied Mathematics, University of Queensland 17th March 2023.
- Applied Mathematics, UNSW Sydney 23rd February 2023.
- Biophysics & Soft Matter, DAMTP, University of Cambridge, 19th July 2022.
- CNCS, University of Bath, 6th July 2022.
- Rangamani Lab(virtual), UCSD, 30th June 2022.
- Theory Seminar, Institut Curie, 30th June 2022.
- Physics Department, Durham University, 20th June 2022.
- CMCB Seminar, University of Warwick, 16th June 2022.
- IMB, University of Queensland, 10th March 2022.
- Soft Matter Seminar, Department of Chemical Engineering, Kyoto University, 28th January 2019.
- Bio-Soft Matter Theory, Department of Chemistry, Tokyo Metropolitan University, 17th January 2019.
- Theory Group, NCBS (The Simons Centre), Bangalore, 3rd May, 2017.

Industry Study Groups

- MISG23, Monash University, 30th Jan - 3rd Feb 2023
- ESGI130, University of Warwick, 2017

Teaching

- 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* 4th Year Project

Supervision

PhD Students

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

Funding & Awards

- Marie Skłodowska–Curie Action European Postdoctoral Fellowship, EU Horizon Programme.
- PoLNet2 funding in support of *Physics of Living Systems* conference at University of Warwick.
- QJMAM grant to attend *Novel Physics of Living Systems in Roscoff*, Brittany 2019.
- London Mathematical Society bursary to attend *British Applied Mathematics Colloquium* 2019.
- Physics Day funding for organising a 1-day conference at the University of Warwick.
- IOP poster prize *PhysCell* 2018.
- IOP travel bursary to attend *PhysCell* 2018.
- SIAM poster prize *British Applied Mathematics Colloquium* 2017.

Professional Activities & Outreach

- 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).
- Reviewed for Soft Matter, Science Advances, Nature Communications, EPJE & Journal of the Mechanics and Physics of Solids.
- Organised Physics Days at University of Warwick entitled Physics of Living Systems, 20th September 2019 and Mechanics of Membranes: From Differential Geometry to Cell Transport, 2nd November 2018.
- Demonstrated Low-Reynolds number fluid mixing experiment for University of Warwick Physics Open Days.
- Events coordinator for Warwick SIAM Student Chapter 2017 (Involved in organising a monthly seminar and an annual 1-day conference).
- Member of Australian Society for Biophysics (ASB), Australian Mathematical Society (AMS & ANZIAM) and Institute of Physics (IOP).

Other Skills

- Experience with programming in Mathematica, Python, C++, Julia & Matlab.
- Certified First Aid and CPR provider (Australia - HLTAID011).

References

Available upon request.