

Alan Walker
Senior Lecturer
School of Computing, Engineering and Physical Sciences
School of Computing, Engineering and Physical Sciences



Area of academic expertise - outline

Mathematical modelling of liquid crystals

Ultrasonics

Fluid Dynamics

Qualifications

Doctor of Philosophy, University of Strathclyde

Award Date: 2 Jun 2008

Bachelor of Science (Hons.), University of Strathclyde

Award Date: 11 Jun 2003

12 Sep 2016 → ... Fellow of the Higher Education Academy, FHEA

Chartered Mathematician, CMath

Research output

Measuring the success of mathematics and statistics support sessions at UWS

Bakhshi, A., Mekwi, W. R., Nisbet, K. C. & Walker, A. J., 1 Sep 2021, In: MSOR Connections. 19, 2, 14 p.

XR maths – designing a collaborative extended realities lab for teaching mathematics

Gilardi, M., Hainey, T., Bakhshi, A., Rodriguez, C. & Walker, A., 20 May 2021, (Accepted/In press) *15th European Conference on Games Based Learning*. Academic Conferences and Publishing International Ltd

Structure of smectic-A liquid crystals in nonuniform domains: Modeling the impact of imperfect boundaries

al Sallo, A. S., Walker, A. J. & Boswell, G. P., 16 Mar 2020, In: Physical Review E. 101, 3, 17 p., 032703.

Mathématiques sans Frontières 2019

Walker, A., 4 Aug 2019, Mathematics Today, 55, 4, p. 139 1 p.

Maternal fetal triage index vs. emergency severity index: increasing clinical safety by identifying and prioritising acutely unwell pregnant women

Nisbet, L., Walker, A., Cottam, J., Thomas, M. B. K., Williams, L., Pappan, S., Anjali, J. H., Sujith, B., Lohana, S. & Mathew, S., 28 Jun 2019.

Comparison of empirical and predicted substrate temperature during surface melting of microalloyed steel using TIG technique and considering three shielding gases

Munoz De Escalona, P., Walker, A., Ogwu, A., Mridha, S. & Baker, T. N., 31 May 2019, In: Applied Surface Science. 477, p. 179-183 5 p.

Maternal fetal triage index vs. emergency severity index: increasing clinical safety by identifying and prioritising acutely unwell pregnant women

Nisbet, L., Walker, A., Cottam, J., Thomas, M. B. K., Williams, L., Pappan, S., Anjali, J. H., Sujith, B., Lohana, S. & Mathew, S., 1 Feb 2019.

Mathématiques sans Frontières report 2019

Walker, A. J. & Mekwi, W. R., 16 Jan 2019, The Scottish Mathematical Council Journal, 49, p. 11-13 3 p.

Mathématiques sans Frontières report 2018

Walker, A. J. & Mekwi, W. R., Dec 2018, In: The Scottish Mathematical Council Journal. 48, p. 10-11 2 p.

Asymptotic properties of radial $A+B\rightarrow C$ reaction fronts

Trevelyan, P. & Walker, A., 13 Sep 2018, In: Physical Review E. 98, 15 p., 032118 .

Grange Academy win maths prize

Walker, A., 12 Aug 2018, Mathematics Today, 54, 4, p. 127 1 p.

"Pipe Organ" inspired air-coupled ultrasonic transducers with broader bandwidth

Zhu, B., Tiller, B., Walker, A. J., Mulholland, A. J. & Windmill, J. F. C., 31 Jul 2018, (E-pub ahead of print) In: IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control. 65, 10, p. 1873-1881 9 p.

The provision of mathematics and statistics support in Scottish Higher Education Institutions (2017): a comparative study by the Scottish Mathematics Support Network

Ahmed, S., Davidson, P., Durkacz, K., Macdonald, C., Richard, M. & Walker, A., 1 May 2018, In: MSOR Connections. 16, 3

Manufacturing, numerical and analytical model limitations in developing fractal microchannel heat sinks for cooling MEMS, microelectronics and aerospace components

Kode, T. E., Ogwu, A. A., Walker, A., Mirzaeian, M. & Wu, H., 29 Oct 2017, *Micro and Nanomanufacturing Volume II*. Jackson, M. J. & Ahmed, W. (eds.). Springer International Publishing AG, p. 499-543 Chapter 17

"Pipe organ" air-coupled broad bandwidth transducer

Zhu, B., Tiller, B., Walker, A., Windmill, J. & Mulholland, A., 6 Sep 2017. 4 p.

A pipe organ-inspired ultrasonic transducer

Walker, A. & Mulholland, A., 5 Sep 2017, In: IMA Journal of Applied Mathematics. 82, 6, p. 1135-1150 16 p.

The effectiveness of a Sierpinski carpet-inspired transducer

Koubayssi, S., Walker, A. & Roach, P., 1 Sep 2017, In: Fractals. 25, 5, 15 p., 1750050.

A Mathematical Model of a Novel 3D Fractal-Inspired Piezoelectric Ultrasonic Transducer

Canning, S., Walker, A. & Roach, P. A., 17 Dec 2016, In: Sensors. 16, 12, 16 p., 2170.

A theoretical model of an ultrasonic transducer incorporating spherical resonators

Walker, A. & Mulholland, A., 1 Feb 2016, In: IMA Journal of Applied Mathematics. 81, 1, p. 1-25 25 p.

The use of fractal geometry in the design of piezoelectric ultrasonic transducers

Mulholland, A. J., Mackersie, J. W., O'Leary, R. L., Gachahan, A., Walker, A. J. & Ramadas, N., 5 Sep 2012, *2011 IEEE International Ultrasonics Symposium*. Piscataway, NJ: IEEE, p. 1559-1562 4 p.

Wave-induced perturbations in cylindrically layered smectic A liquid crystals

Walker, A. J. & Stewart, I. W., Apr 2012, In: Journal of Applied Mathematics and Physics. 63, 2, p. 357-371 15 p.

Liquid crystal modelling and display applications workshop

Walker, A. J., 31 Jan 2012, 1 ed. Liquid Crystals Today: Taylor & Francis. 3 p.

Piezoelectric ultrasonic transducers with fractal geometry

Mulholland, A. & Walker, A., Dec 2011, In: Fractals. 19, 4, p. 469-479 11 p.

Improving sensitivity of electrostatic transducer through fluidic amplification technique for air-coupled ultrasound
Hamid, S. B. B. A., O'Leary, R., Mulholland, A. & Walker, A., 10 May 2011.

Polymer substrates for the rapid implementation of capacitive ultrasonic transducers
Mackie, E., O'Leary, R., Gachagan, A. & Walker, A., 10 May 2011.

Acoustic waves in compressible planar layered smectic liquid crystals
Walker, A. & Stewart, I., 16 Jul 2010, In: *Journal of Physics: Condensed Matter*. 22, 32, p. 1-13 13 p., 325106.

An electrostatic ultrasonic transducer incorporating resonating conduits: theory and preliminary experimental validation
Walker, A. J., Bahrin, S. A. H., Ramadas, S. N. & Mulholland, A. J., Jan 2010.

A theoretical model of an electrostatic ultrasonic transducer incorporating resonating conduits
Walker, A. & Mulholland, A., 2010, In: *IMA Journal of Applied Mathematics*. 75, 5, p. 796-810 15 p.

Poiseuille flow of a smectic A liquid crystal
Walker, A. & Stewart, I., 2010, In: *International Journal of Engineering Science*. 48, 12, p. 1961-1970 10 p.

A theoretical model of an electrostatic transducer incorporating resonating conduits
Walker, A., 14 Sep 2009.

A theoretical model of a new electrostatic transducer
Walker, A., 11 May 2009.

A theoretical model of a new electrostatic transducer incorporating fluidic amplification
Walker, A. J., Mulholland, A. J., Campbell, E. & Hayward, G., 21 Mar 2009, *2008 IEEE International Ultrasonics Symposium*. Piscataway, NJ: IEEE, p. 1409-1412 4 p.

Couette flow of a smectic A liquid crystal
Walker, A. J. & Stewart, I. W., 17 Mar 2009, In: *Journal of Physics: Condensed Matter*. 21, 15, 7 p., 155101.

The alignment of cylindrically layered smectic A liquid crystals with director tilt on the boundaries
Walker, A., Aug 2008, In: *Journal of Physics A: Mathematical and Theoretical*. 41, 38, 385205.

Layer undulations in a smectic C liquid crystal with weak anchoring
Walker, A. J. & Stewart, I. W., 2007, In: *Journal of Physics A: Mathematical and Theoretical*. 40, p. 11849-11861 13 p.

Periodic disturbances in cylindrically layered smectic A
Walker, A. J. & Stewart, I. W., 2007, In: *Molecular Crystals and Liquid Crystals*. 478, 1, p. 33-43 11 p.

Activities

Maths Week Scotland 2021 (Event)

Alan Walker (Peer reviewer)
27 Sep 2021 → 3 Oct 2021

CETL MSOR 2021

Alan Walker (Participant)
2 Sep 2021 → 3 Sep 2021

University Public Engagement Training

Alan Walker (Participant)

27 Apr 2021 → 18 May 2021

British Mathematics Conference - British Applied Mathematics Conference 2021

Alan Walker (Invited speaker)

6 Apr 2021 → 9 Apr 2021

Maths Week Scotland - Glasgow Mathematics Journal Trust

Alan Walker (Reviewer)

2021 → ...

Marvellous Mathematics

Alan Walker (Contributor)

28 Sep 2020 → 4 Oct 2020

Careers in Mathematics Presentation - Trinity High School

Alan Walker (Speaker)

4 Feb 2020

STEM Ambassador/Teacher Networking Event for Renfrewshire and Inverclyde Schools

Alan Walker (Participant)

4 Feb 2020

Teacher/Ambassador Session for East Ayrshire

Alan Walker (Participant)

23 Jan 2020

Maths Wi Nae Borders - Marker

Alan Walker (Examiner)

1 Nov 2019

What Makes a Mathematician

Alan Walker (Presenter)

21 Oct 2019

Maths Week Scotland at Lochfield Primary

Alan Walker (Presenter)

7 Oct 2019

STEM Mathematics and Statistics Workshop

Andisheh Bakhshi (Speaker) & Alan Walker (Speaker)

19 Sep 2019

Modelling MEMS Sensors and Actuators

Alan Walker (Participant)

4 Jul 2019

The Scottish Mathematical Council Journal (Journal)

Alan Walker (Peer reviewer)

1 Jul 2019

Maple Teaching & Training Day

Alan Walker (Participant)

28 Jun 2019

Mathematics Scrutiny Day and Field Board

Alan Walker (Examiner)

12 Jun 2019 → 13 Jun 2019

Mathematiques sans Frontieres Prizegiving

Alan Walker (Host)

7 Jun 2019

SmartSTEMs - TERCES SEDOC

Alan Walker (Presenter)

30 May 2019

SmartSTEMs - TERCES SEDOC

Alan Walker (Speaker)

28 May 2019

SHOWCASING RESEARCH & ENTERPRISE ACTIVITY TO NURTURE COLLABORATION

Alan Walker (Participant)

8 May 2019

Embedding Playfulness in Mathematics

Alan Walker (Participant) & Wan Mekwi (Participant)

5 Apr 2019

Scottish Mathematics Support Network

Alan Walker (Participant)

5 Apr 2019

Mathematiques Sans Frontieres

Alan Walker (Examiner), Wankere Mekwi (Examiner), Chris Smith (Examiner), Alan Taylor (Examiner) & Jonathan Hamilton (Examiner)

3 Apr 2019

What Makes a Mathematician

Alan Walker (Speaker)

15 Feb 2019

Ph.D. Examination

Alan Walker (Examiner) & James Windmill (Examiner)

14 Jan 2019

UWE External Examiner Conference

Alan Walker (Participant)

9 Jan 2019

St Joseph's College STEM Day 2018

Alan Walker (Contributor)

22 Nov 2018

Careers with Mathematics

Alan Walker (Speaker)

5 Nov 2018

Engaging student and staff voices - Webinar

Alan Walker (Participant)
16 Oct 2018

Maths Week Scotland 2018 - Heriot Primary School

Alan Walker (Speaker)
10 Sep 2018

CETL-MSOR 2018

Alan Walker (Organiser)
5 Sep 2018 → 6 Sep 2019

UK Education Awards 2018

Alan Walker (Advisor)
26 Jun 2018

UWS Learning, Teaching & Research Conference 2018

Alan Walker (Participant)
17 Jun 2018 → 18 Jun 2018

Scottish Mathematical Council Conference

Alan Walker (Organiser)
19 May 2018

Scottish Mathematical Council Meeting

Alan Walker (Contributor)
18 May 2018

Assessment and Feedback Seminar

Alan Walker (Participant)
16 May 2018

SENSORS (Journal)

Alan Walker (Peer reviewer)
16 May 2018

SENSORS (Journal)

Alan Walker (Peer reviewer)
5 Apr 2018

Mathematiques Sans Frontiers

Alan Walker (Examiner) & Wankere Mekwi (Examiner)
4 Apr 2018

Minute Taking

Alan Walker (Participant)
22 Feb 2018

University of South Wales

Alan Walker (Visiting researcher)
13 Dec 2017 → 15 Dec 2017

Internal Examiner of PhD Candidate

Alan Walker (Examiner)
6 Oct 2017

Fun Maths Roadshow

Alan Walker (Examiner)
29 Sep 2017

Careers in Mathematics

Alan Walker (Speaker)
15 Sep 2017

Hidden Mathematics

Alan Walker (Speaker)
15 Sep 2017

Mathematical Beauty

Alan Walker (Speaker)
15 Sep 2017

Maths is BEST

Alan Walker (Organiser)
12 Sep 2017

Careers in Mathematics

Alan Walker (Speaker)
11 Sep 2017

Scottish Mathematics Support Network (External organisation)

Alan Walker (Member)
5 Sep 2017

Making Maths Count in Renfrewshire

Alan Walker (Participant)
21 Aug 2017

SENSORS (Journal)

Alan Walker (Peer reviewer)
12 Aug 2017

Scottish Mathematical Council Meeting (Event)

Alan Walker (Member)
11 Aug 2017

Scottish Mathematical Challenge Prize-Giving Ceremony

Alan Walker (Speaker)
16 Jun 2017

Careers in Mathematics - Presentation

Alan Walker (Speaker)
12 Jun 2017

Scottish Mathematics Support Network (Event)

Alan Walker (Member)
2 Jun 2017

Scottish Mathematical Council Meeting (Event)

Alan Walker (Member)
26 May 2017

SECURE Grand Challenge

Alan Walker (Participant)
23 May 2017

SENSORS (Journal)

Alan Walker (Peer reviewer)
12 May 2017

Gallowhill Primary Science Week - Mathematics

Alan Walker (Invited speaker)
28 Apr 2017

Scottish Education Awards 2018

Alan Walker (Contributor)
24 Apr 2017

Scottish Mathematical Council Conference

Alan Walker (Member of programme committee)
4 Mar 2017

University of South Wales KS4 Mathematics Masterclass

Alan Walker (Invited speaker)
11 Feb 2017

Scottish Mathematical Council (External organisation)

Alan Walker (Member)
13 Jan 2017

Darnley Primary - Science Week

Alan Walker (Presenter)
21 Nov 2016

The Use of Fractal Geometry in the Design of Piezoelectric Ultrasonic Transducers

Alan Walker (Speaker)
14 Nov 2016

Department of Mathematics and Statistics: Annual Lecture

Alan Walker (Participant)
8 Nov 2016

Todholm Primary - Science Week

Alan Walker (Presenter)
7 Nov 2016

Getting Started with R

Alan Walker (Participant)
24 May 2016 → 26 May 2016

Careers in Mathematics

Alan Walker (Presenter)
29 Feb 2016

Ultrasonics

Alan Walker (Speaker)
14 Oct 2015

Mathematical modelling of electrostatic and piezoelectric ultrasonic transducers

Alan Walker (Speaker)
13 Oct 2015

IMA Journal of Applied Mathematics (Journal)

Alan Walker (Peer reviewer)
26 May 2015

Mathematical modelling of smectic A liquid crystals

Alan Walker (Speaker)
15 May 2011

Modelling smectic A liquid crystals

Alan Walker (Speaker)
14 Apr 2011

An electrostatic ultrasonic transducer incorporating resonating conduits: theory and preliminary experimental validation

Alan Walker (Speaker)
10 May 2010