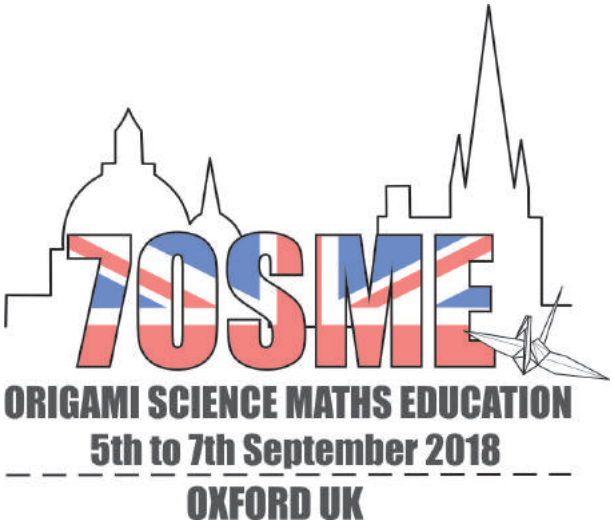

Programme and Information for The 7th International Meeting on Origami in Science, Mathematics and Education

Version 1.8

Welcome

Dear Colleagues,

It is our pleasure to welcome you to the 7th International Meeting on Origami in Science, Mathematics and Education (7OSME) in Oxford, United Kingdom being held September 5-7 2018. The meeting will be held in conjunction with the Autumn Convention of the British Origami Society (8-9 September), who have just reached their 50-year anniversary this year.

The OSME meeting is one of the most important gatherings of the origami community around the world. Previous meetings, held approximately every four years, have been highly successful; the community has grown exponentially, which is demonstrated by the fact that this year we have over 300 participants registered to attend. The meeting proceedings have become the definitive guide for advanced origami research.

There were 211 abstracts submitted of which 127 papers have been accepted for presentation as well as 24 posters. We have an extremely varied programme planned with 32 sessions focused around the six tracks of Science, Math, History, Education, Art, and Engineering. We also have four exemplary keynote speakers for the plenary sessions and an evening of fascinating workshops.

We hope you enjoy a successful meeting and a pleasant stay in Oxford.

7OSME Organising Committee

Contents

All participants must follow the code of conduct of 7OSME, which can be downloaded here: http://osme.info/7osme/Documents/code_of_conduct.pdf
If you have any questions or concerns please contact a member of the organising committee.

Sponsors

The 7OSME conference is grateful for the support offered by the following organisations who have provided financial and in-kind support toward 7OSME.

Gabriella & Paul Rosenbaum Foundation

The Maurice Lubbock Memorial Fund

Organisers

Organising Committee

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Mark Bolitho (Vice Chair)
Yan Chen (Vice Chair)
David Trenchard (Finance)
Chris Budd
Simon Guest
Adam Woodhouse

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Yan Chen (Chair of Submissions)
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Jorge Pardo
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Mark Schenk
Tomohiro Tachi
Ryuhei Uehara
Patsy Wang-Iverson
Zhong You

Advisers to Organising Committee

Clementine Hadfield
Graeme Smith
Tomohiro Tachi
Patsy Wang-Iverson

Travel Information

Oxford is very accessible by public transport (rail and bus), but is extremely limited in parking within the city centre, where the conference venues are. Please bear that in mind if you decide to drive to Oxford.

By Air

The following airports are close to Oxford and have train or coach (bus) services to Oxford.

London Heathrow Airport (LHR) is the most convenient airport to reach Oxford. There is a direct coach service known as The Airline from the airport to Gloucester Green Bus Station, Oxford. The coach operates every 20 minutes during peak time and 30 minutes for any other time. It starts from the Central Coach Station (near Terminals 2 and 3) and has a stop at Terminal 5. If you arrive at Terminal 4, you need to use free shuttle bus 492 or 480 to reach Terminal 5 first.When boarding ask for Gloucester Green Bus Station (last stop). St Anne's is about 10 minutes walk via St Giles to the Woodstock Road.

Single and Return tickets can be bought from the driver on The Airline coaches in cash, online via the app, or by a countless credit or debit card. A period return is more economic than two singles. Please note that drivers can only accept contactless credit or debit card payments up to the value of £30. US $ and Euros are accepted, (exchange rates may not be good).

You may buy tickets from the National Express machines or desks at the Airport but there have been incidents that the tickets from them are NOT valid on The Airline coach services.

London Gatwick Airport (LGW) is also linked to Oxford by the Airline coaches though the frequency is every hour. The Airline coach has stops at both North (stand 4, 5 outside arrivals) and South Terminals (stands 1, 2). Scheduled journey time 2h 25 minutes. Ticket details and arrival stop at Oxford are as same as those for Heathrow.

London Luton Airport (LTN) is on the north of London. You may use a direct National Express coach service to Oxford or connect by train to Central London, then take rail or coach options to Oxford.

Birmingham International Airport (BHX) is also not far from Oxford. Cross Country Trains run a direct train service to Oxford every hour (1h journey time). It can be caught from the railway station of Birmingham International Airport, which is

linked to the airport by a monorail. Note that there is no rail transport to Oxford from Birmingham International late at night (last train 22:14), and from Oxford to the airport early in the morning.

London Stansted Airport (LST) is located on the northeast of London. There is no direct service from Stansted to Oxford. You have to use the Stansted Express train to London Liverpool Street first, then go to either Paddington station or Marylebone station by underground, followed by another train journey to Oxford. Alternatively, you may use Easybus, Terravision or National Express coach services to Central London destinations including Victoria, Kings Cross, Marble Arch and Paddington. The coach to London takes slightly longer than the train, 1-1.5h dependent on traffic.

Delegates who return to the airport from Oxford after the conference are advised to purchase return tickets which could be more economic than two singles.

By Train

Oxford railway station is located on the western edge of the city centre, about 20 min walk to St Annes. The station is managed by Great Western Railway, with routes from Stratford-upon-Avon to London Paddington, London Marylebone and Bristol, and is also served by Virgin Trains from Scotland to the south coast.

Services to and from London Paddington and Marylebone run regularly during the day (at least four per hour). Note that there are fast trains (about 55 mins) and slow trains (about 90 mins), return tickets similar cost to single. You can purchase tickets from Great Western Railway or any other rail companies.

Eurostar trains use St Pancras railway station in London. The most convenient way to reach Oxford is to take the London Underground Circle Line or Hammersmith & City Line to London Paddington or Marylebone Station, followed by a direct rail service to Oxford. Eurostar ticket holders can buy a reduced price return rail ticket to Oxford (Euro High Saver) at £35 allowing anytime rail travel and return within 2 months.

If tickets are purchased through the Eurostar site, onward-connections to or from Brussels, Paris or Lille to other French, Netherlands or German destinations including Amsterdam, Rotterdam, Koln, Bordeaux and Marseille can often included at little additional price. There are direct Eurostar trains to a number of French destinations.

By Coach (Bus)

Eurolines operates Europe-wide coach (bus) services, some of which go direct to Oxford.

There are two express coaches from London to Oxford, operating typically every

10-20 minutes 24h a day to Oxford: the X90 Oxford Express (6:30 01:00 from London) and the Oxford Tube (24h). When boarding either service ask for Gloucester Green Bus Station (last stop), the shortest distance to St Annes. London stops include Victoria (Buckingham Palace Road by the coach station), Marble Arch, Baker Street and Notting Hill tube. Journey time 1-1.5h. Check websites for exact stop locations. As with The Airline coaches, tickets can be bought on board by cash, contactless card, or online via the app. Period return more economic than single.

By Car

Limited street parking is available in Oxford. There are also severe restrictions on access to many of the streets in the centre of the City. Traditional routes such as High Street/St Aldates/Queen St and Cornmarket are either closed to vehicles or have very limited access and are protected by number plate-reading cameras and frequent police patrols. You have been warned!

The nearest public car parks are at Worcester Street, Gloucester Green, the Westgate Centre and at the Railway Station. They are all expensive. Should you wish to come by car, the advice is to use Park and Ride. You may consider Pear Tree Park and Ride or Water Eaton Park and Ride. Both places have frequent buses to St Anne's.

Within Oxford

Oxford is a very walkable city. St Annes College is only a 10 min walk from the Gloucester Green Bus Station. The college is about 20 min walk from the railway station. The 500 Park & Ride bus runs between the Railway Station and stops outside The Department of Engineering Science (get off at Keble Road) costs is £2.80. From Gloucester Green Bus Station the S2 Gold bus runs from bay 8 and stops outside St. Anne's (Radcliffe Observatory Quarter stop). Outside both stations, there are normally an army of black cabs outside waiting for customers. The cost of a cab should be less than 10.

Oxford has extensive local and regional bus services run by The Oxford Bus Company (local) and Stagecoach (regional). Tickets may be purchased on the bus using cash or contactless credit or debit cards.

Immediately after 7OSME, there is an event called Oxford Open Doors 2018. Many colleges and institutions will open their doors to visitors free of charge. The Bodleian Library is also holding a major exhibition on the works of J.R.R. Tolkien. Tickets are free but advance booking is recommended. The following websites provide information on attractions and events in and around Oxford:
Oxford city guide
Experience Oxfordshire

Registration

Registration for 7OSME will open on at the following times:

Date	Time	Location
Tue. 4th Sept.	12:00 — 18:00	St Anne's College
Wed. 5th Sept.	8:00 — 12:00	Mathematical Institute
	12:00 — 18:00	St Anne's College
Thu. 6th Sept.	8:45 — 18:00	St Anne's College

Check-in/out of St. Anne's College

Delegates who have booked accommodation at St Annes College via the Oxford University Online Stores are required to collect and return their room keys at the Lodge (Reception) of St Annes College. Please be aware that the check-out time is 10am.

If you have booked accommodation at St Annes College by another route (e.g., via universityrooms.co.uk), you can also collect and return your room keys at the Lodge (Reception) of St Annes College. Please advise the porter that your booking is NOT through the 7OSME designated links in this case.

Visit to Satellite Applications Catapult at Harwell

Tuesday 4th September

Delegates who have booked the organised visit to the Satellite Applications Catapult at Harwell must have received a confirmation email. There will be two groups of 45 people each. *Please choose a group while registering.* The coach will depart from outside the Lodge (Reception) of St Annes College at 14.00 and 15.15 on Tue. 4th Sept. 2018. It is expected that your visit will last for 2 hrs. The detailed plan is as follows:

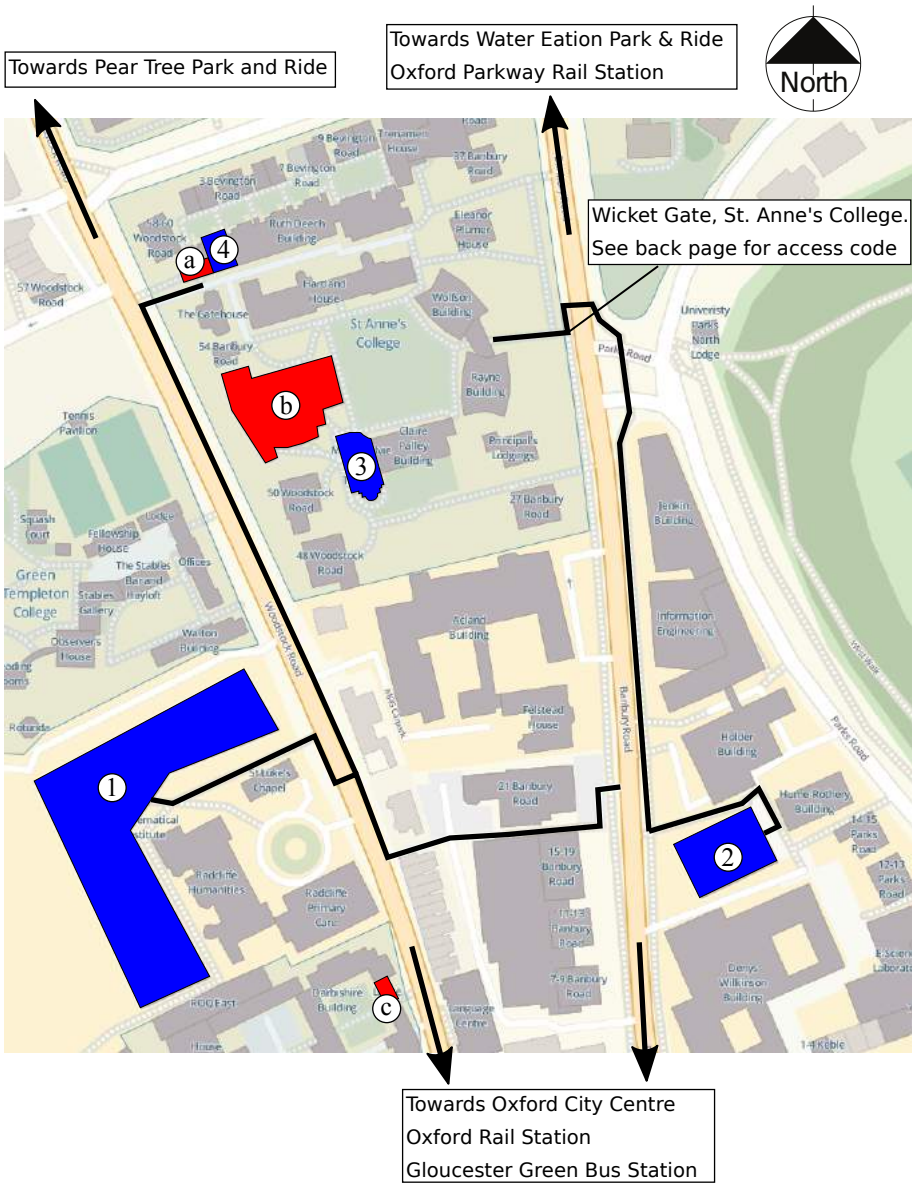
Group 1: Maximum 45 people

14:00		Travel from Oxford to Harwell Campus. Arrive Satellite Applications Catapult, Fermi Avenue, OX11 0QR (sa.catapult.org.uk/about-us/how-to-find-us/)
14:45	14:55	Welcome & short overview of the Satellite Applications Catapult
14:55	15:15	Overview of the Harwell Campus, Clusters and Facilities
15:15	15:45	Overview of Oxford Space Systems
15:45	16:00	Demonstration of Oxford Space Systems deployable in reception area at Satellite Applications Catapult
16:00		Depart Harwell Campus and return to Oxford

Group 2: Maximum 45 people

15:15		Travel from Oxford to Harwell Campus. Arrive Satellite Applications Catapult, Fermi Avenue, OX11 0QR (sa.catapult.org.uk/about-us/how-to-find-us/)
16:00	16:10	Welcome & short overview of the Satellite Applications Catapult
16:10	16:30	Overview of the Harwell Campus, Clusters and Facilities
16:30	17:00	Overview of Oxford Space Systems
17:00	17:15	Demonstration of Oxford Space Systems deployable in reception area at Satellite Applications Catapult
17:15		Depart Harwell Campus and return to Oxford

Venue



(1) Mathematical Institute

(2) Thom Building
Department of Engineering Science

(3) Mary Ogilvie Lecture Theatre
St. Anne's College

(4) Tsuzuki Lecture Theatre
St. Anne's College

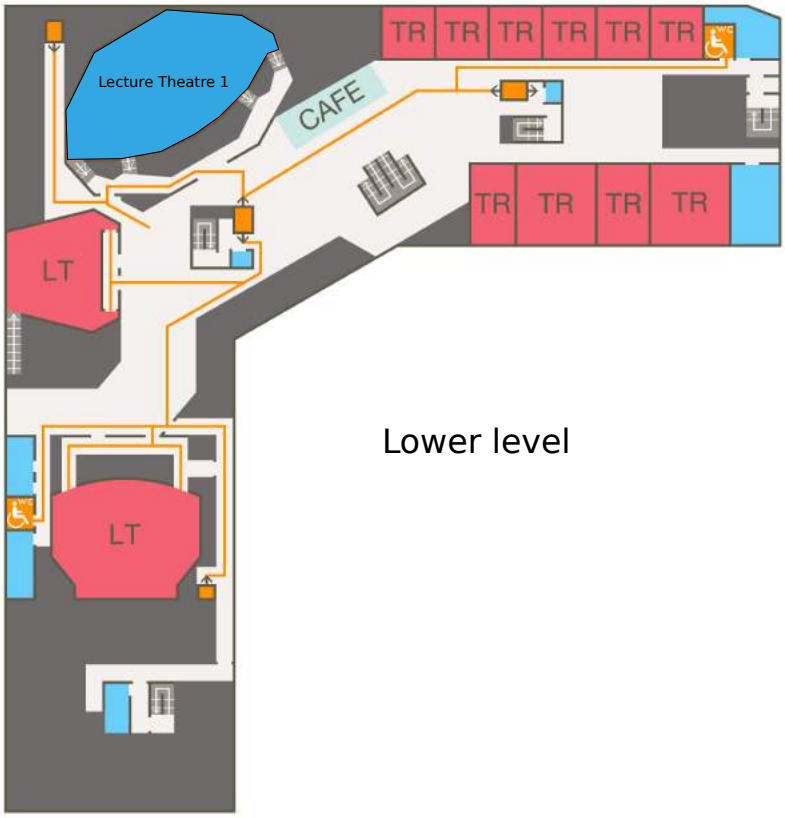
(a) St. Anne's College Porter's Lodge

(b) St. Anne's College Dining Hall

(c) Somerville College Porter's Lodge

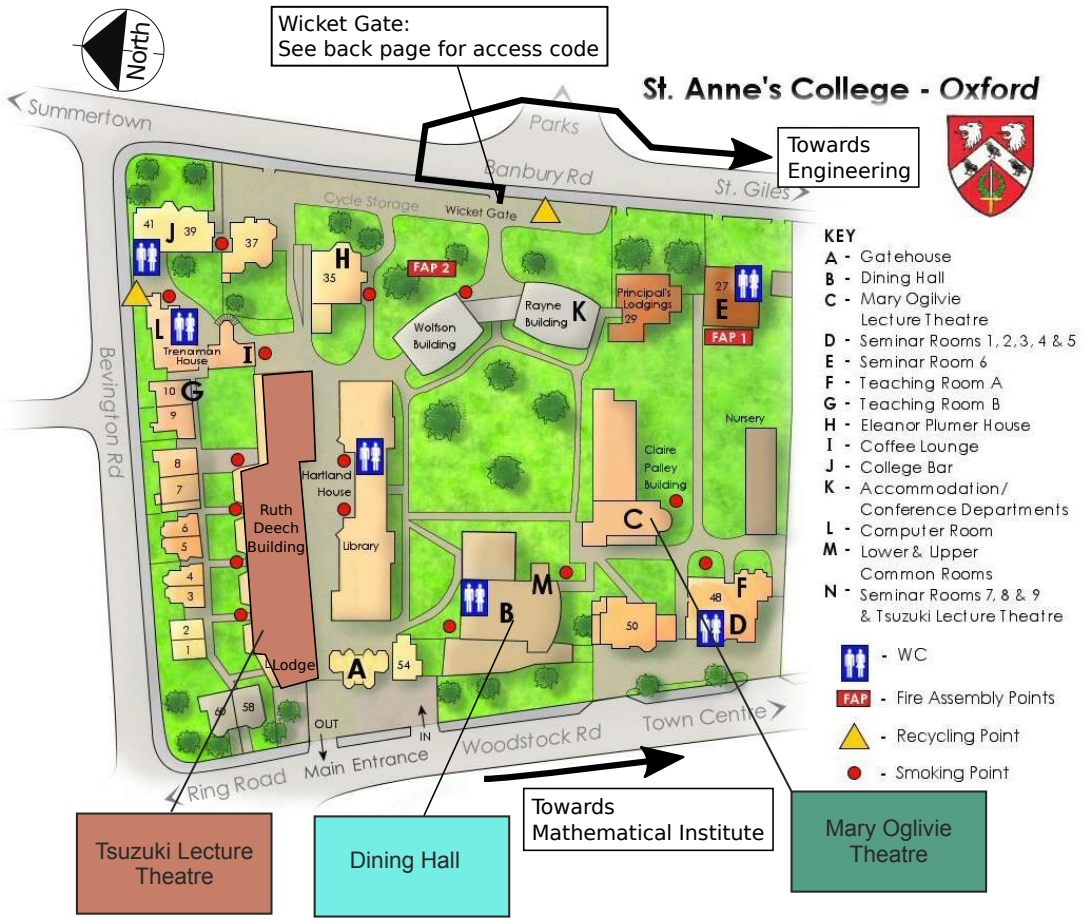
Mathematical Institute

Ground Floor

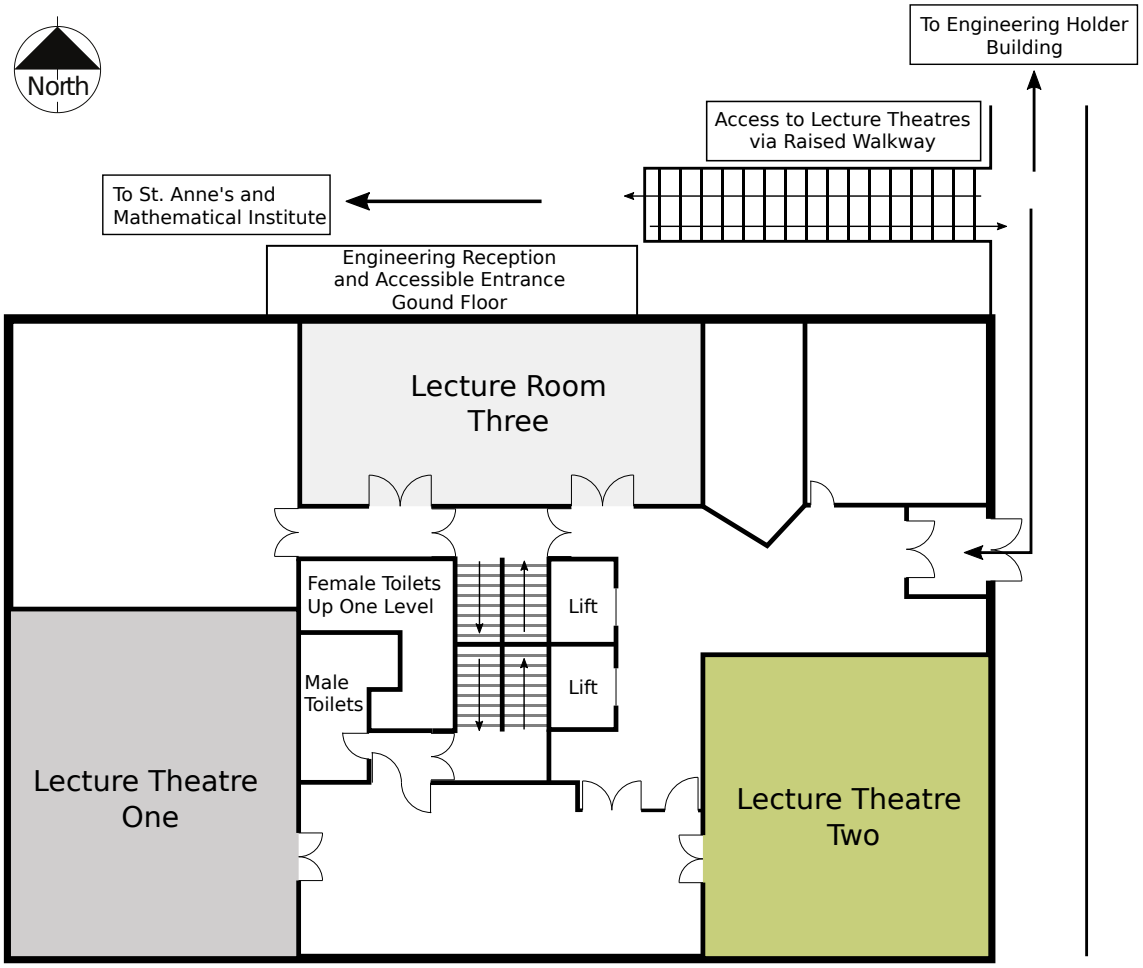


Lower level

St Anne's College



Department of Engineering Science



Department of Engineering Science
Thom Building - First Floor

Connecting to WiFi

Laptops and other WiFi devices should generally use one of the following wireless networks:

eduroam wireless network
Common for universities worldwide and hence a good choice for people who have already setup eduroam from other universities. To connect to eduroam, **you must have this set up at your home university prior to your travel to Oxford.**

Once you choose to connect to eduroam in Oxford, you will be prompted enter your Remote Access username and password. For Oxford users, your username is in the following example format: abcd1234@OX.AC.UK - enter the OX.AC.UK part of your username in uppercase as some devices will not connect to eduroam if this is lowercase.

The Cloud wireless network for public access

It can be used by anyone and hence useful if a person does not have an eduroam account. The connection steps are as follows.

1. From the available WiFi networks select 'The Cloud'. Make sure not to select any other WiFi network.
2. Open a web browser, if 'The Cloud' homepage does not come up automatically, type in www.bbc.co.uk. As this is an open (rather than secure) website 'The Cloud' homepage will then come up. 3. If you can't see the Sky WiFi page when connecting to the network, you may need to manually type in the web url: http://service.thecloud.net Here you will be able to Register/Login and browse the internet.
3. Follow instructions to set up a username and password if you have not done this before for 'The Cloud'. 'The Cloud' will also ask for some other information like name and address.

   You can then log in!
4. 'The Cloud' can take up to two devices so if you have set up a username and password for example for your laptop you can also use these for your phone.
5. 'The Cloud' is free at St Annes and can be used widely around the UK. Charges may apply at other venues.
6. Information leaflets are also available at the Lodge (Reception) of St Annes College.

Keynote Speakers

Sergio Pellegrino is the Joyce and Kent Kresa Professor of Aeronautics and Civil Engineering at the California Institute of Technology, JPL Senior Research Scientist and co-director of the Space Solar Power Project. He received a Laurea in Civil Engineering from the University of Naples in 1982 and a PhD in Structural Mechanics from the University of Cambridge in 1986. From 1983 to 2007, he was on the faculty of the Department of Engineering at the University of Cambridge, where he founded the Deployable Structures Laboratory.

Sergio's general area of research is the mechanics of lightweight structures, focusing on packaging, deployment, shape control and stability. With his students and collaborators, he is currently working on novel concepts for future space telescopes, spacecraft antennas, and space-based solar power systems. Sergio's publications have been selected for several awards, including the ICE James Watt Medal; AIAA Gossamer Spacecraft Forum Best Paper Award; IASS Tsuboi Award; ASME/Boeing Best Paper Award and ASME Mechanisms and Robotics Committee Best Paper Award. He received a Pioneers Award in 2002 from the Space Structures Research Centre, University of Surrey, and NASA Robert H. Goddard Exceptional Achievement Team Awards in 2009 and 2016 for his contribution to the superpressure balloon development.

Sergio is a Fellow of the Royal Academy of Engineering, a Fellow of AIAA and a Chartered Structural Engineer. He is currently President of the IASS and has been the founding chair of the AIAA Spacecraft Structures Technical Committee. He has authored over 300 technical publications.

Tomohiro Tachi is an associate professor in Graphic and Computer Sciences at the University of Tokyo. He studied architecture and received his PhD in Engineering from the University of Tokyo. Tachi's research interests include origami, structural morphology, computational design, and digital fabrication. He has been designing origami from 2002 and keeps exploring three-dimensional and kinematic origami through computation. He developed a number of well-known origami software tools including "rigid origami simulator", "origamizer", and "freeform origami", which are available from his website. Tomohiro was the one of the keynote speakers at the ASME IDETC 2016.

Tadashi Tokieda is a professor of mathematics at Stanford University; previously he was the Director of Studies in Mathematics at Trinity Hall, Cambridge. He was born in Japan and educated in France as a classical philologist. He taught himself basic mathematics from Russian collections of problems. He was a 1989 classics graduate from Jochi University in Tokyo and obtained his bachelor's degree from Oxford in mathematics. He completed his PhD at Princeton under the supervision of William Browder.

Tadashi was the William and Flora Hewlett Foundation Fellow at the Radcliffe Institute for Advanced Study at Harvard University in 2013-2014, and the Poincaré Distinguished Visiting Professor at Stanford in 2015-2016. He was a recipient of Paul R. Halmos - Lester R. Ford Award. He works on mathematical physics problems. He is also very active in inventing, collecting, and studying toys that uniquely reveal and explore real-world surprises of mathematics and physics.

Emma Frigerio had taught mathematics at the University of Milano, Italy, until 2015. She has been interested in origami since she was a teenager, and became a member of the Italian origami association, *Centro Diffusione Origami*, in 1986. Shortly afterwards she became interested in exploring the connections between origami and mathematics with a view to using origami in math classes at all levels.

Frigerio developed and taught workshops on using origami to teach and explain mathematics and for teacher training programs at two universities in Milano. She also developed, together with Maria Luisa Spreafico, a program of hands-on mathematical activities using origami for primary school students.

Frigerio spoke at the first International Meeting of Origami Science and Technology in Ferrara, Italy in 1989, which was the forerunner of what was to become OSME. She has since attended and played an active part in the OSME meetings.

Instructions for Presenters and Session Chairs

Presenters: Presentations are 20 minutes with 5 minutes for questions. Please arrive at the room during the Lunch/Break before your session so that an attendant can to transfer your presentation to the provided (Windows) laptop. Acceptable formats are Microsoft PowerPoint (.ppt/.pptx) or .pdf. Alternatively you can use your own laptop, but please ensure you bring the appropriate adapters to provide HDMI or VGA output. Please arrive at the room at least 5 minutes before the start of the session and introduce yourself to the chair.

Session Chairs: Please arrive at the room at least 5 minutes before the start of the session to meet the presenters. During the session please ensure presentations are kept to schedule as delegates may wish to switch sessions between presentations. If a presenter for a paper is not present please take a 25 minute break and start the next presentation at its designated time.

Poster Printing Instructions: If you are invited to the poster sessions, please prepare your poster in either A0 portrait format (width 841 x length 1189 mm), or ANSI standard paper size E portrait format (width 34.0 x length 44.0 in). Formats other than those can **NOT** be accepted as the fixed glass frames in the venues are in these dimensions. The poster sessions will take place at the Mathematical Institute on the first morning and final afternoon of the conference. You can (a) have the posters printed in Oxford or (b) print the posters by yourself and bring them to Oxford.

For option (a), the procedure is as follows:

1. You need to email the print ready artwork to the Physics Department of Oxford University and we can collect posters from them. Details of the poster printing service can be found at: https://tinyurl.com/y88mlq5h

2. Please ensure that you submit your job by August 29th so that we can receive the posters in time.

3. Please send the receipt to Dr Jiayao Ma (jiayao.ma@tju.edu.cn) as soon as the order is successfully placed. We shall collect the poster for you.

Note that you must pay for your posters to be printed online and 7OSME organisers do not accept any responsibility for print quality.

For option (b), you need to **give the posters to us at Registration in the Mathematical Institute at 8:00 on Wednesday, 5th September.**

Programme Overview

Abstracts can be downloaded from the 7OSME Website:
http://osme.info/7osme/program.html

Wednesday 5th September

	Maths Institute	Tsuzuki Lecture Theatre	Mary Oglivie Theatre	Engineering One	Engineering Two
09:00	Opening				
09:15	Keynote				
10:15	Keynote				
11:15	Break				
11:30	Poster				
12:30	Lunch* St. Anne's College Dining Hall				
		Curved Folds and Tessellations	Rigid Origami One	Metamaterials	Theory One
13:45		44	133	197	201
14:10		92	56	55	96
14:35		126	191	60	202
15:00		159	192	3	
15:25	Break				
		Art and Design One	Origami Design	Deployable Structures	Folded Core Structures
15:40		7	15	203	85
16:05		66	29	11	35
16:30		188	54	140	36
16:55		207	95	89	100
17:20		211	141	117	76
17:45	Drinks Reception (All welcome) St. Anne's College				
19:30	Gala Dinner+ St. Anne's College Dining Hall				

Posters will remain on display in the Mathematical Institute throughout the meeting.

* Lunch in St. Anne's Dining Hall for delegates who have pre-booked lunch. Make sure you bring your lunch tickets.

+ The Gala Dinner at St. Anne's College is for delegates who have pre-booked. Make sure you bring your dinner tickets. Dress code: Smart Casual

Thursday 6th September

	Maths Institute	Tsuzuki Lecture Theatre	Mary Oglivie Theatre	Engineering One	Engineering Two
		Science One	**Colour Change Origami**	**Mechanical Behaviour One**	**Simulation One**
09:00		125	8	57	99
09:25		154	18	98	145
09:50		177	80	112	137
10:15		9	189	160	187
10:40	**Break**				
		Art and Design Two	**Rigid Origami Two**	**Mechanical Behaviour Two**	**Fabrication One**
11:00		70	24	83	45
11:25		73	106	166	82
11:50		190	67	94	139
12:15			52	156	34
12:40	**Lunch*** St. Anne's College Dining Hall				
		History	**Flat Origami and Tessellations**	**Robotics**	**Fabrication Two**
14:00		12	50	164	38
14:25		14	93	172	169
14:50		171	97	158	204
15:15		105	168	165	184
15:40	**Break**				
		Education One	**Geometric Constructions**	**Theory Two**	**Simulation Two**
16:00		71	51	90	186
16:25		84	122	75	142
16:50		58	132	116	206
17:15		131	28	1	162
17:40			127	62	157
18:05	**Dinner***				
20:00	**Workshops** Ruth Deech Building, St. Anne's College				

Friday 7th September

	Maths Institute	Tsuzuki Lecture Theatre	Mary Oglivie Theatre	Engineering One	Engineering Two
		Education Two	**Science Two**	**Design of Origami Structures One**	**Tessellations**
09:00		6	10	148	61
09:25		17	21	39	178
09:50		88	33	153	138
10:15			69	144	78
10:40	**Break**				
		Education Three	**Rigid Origami Three**	**Design of Origami Structures Two**	**Thick Panel Origami**
11:00		79	147	107	174
11:25		27	115	77	101
11:50			59	182	
12:15					
12:40	**Lunch*** St. Anne's College Dining Hall				
14:00	**Keynote**				
15:00	**Keynote**				
16:00	**Closing**				

Posters will remain on display in the Mathematical Institute during lunch and following the closing; tea & coffee will be available.

Detailed Programme

Wednesday 5th September

Opening
ROOM: Lecture Theatre One, Mathematical Institute
TIME: 9:00 — 9:15

SESSION: Keynotes One
CHAIR: Simon Guest
ROOM: Lecture Theatre One, Mathematical Institute
TIME: 9:15 — 11:15

Origami and Kirigami for Giant Ultralight Deployable Spacecraft

Sergio Pellegrino

California Institute of Technology

A Little Magic Show with Paper

Tadashi Tokieda

Stanford University

Break
Mathematical Institute
11:15 — 11:30

SESSION: Poster Session
CHAIR: Jiayao Ma
ROOM: Mathematical Institute
TIME: 11:30 — 12:30

Lunch
St. Anne's College Dining Hall
12:30 — 13:45

SESSION: Curved Folds and Tessellations
CHAIR: Jorge Pardo
ROOM: Tsuzuki Lecture Theatre, Ruth Deech Building, St. Anne's College
TIME: 13:45 — 15:25

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44 **Basic Techniques and a Novel Notation for Curved Origami Design**

Jun Mitani

University of Tsukuba

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92 **Representing 3-D Objects Through Flat Tessellations**

Alessandro Beber

Freelance Artist

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126 **Let Them Eat Cake**

Joshua Seibert and David Morgan

Brigham Young University

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159 **Fold Mapping: Parametric Design of Origami Surfaces with Periodic Tessellations**

Matthew Gardiner, Roland Aigner, Hideaki Ogawa and Rachel Hanlon

Ars Electronica Linz GmbH & Co KG

Break
St. Anne's College / Department of Engineering Science
15:25 — 15:40

SESSION: Rigid Origami One
CHAIR: Jun Maekawa
ROOM: Mary Oglivie Theatre, St. Anne's College
TIME: 13:45 — 15:25

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133 **Rigid Foldability of the Augmented Square Twist**

Thomas Hull and Michael Urbanski
Western New England University

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56 **Explaining Curved-Fold Behavior through Normalized Coordinate Equations and Energy Methods**

Jacob Badger[1], Todd Nelson[1], Robert Lang[2], and Larry Howell[1]
[1]Brigham Young University, [2]Lang Origami

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191 **Using Variational and PDE Methods for the Existence of Origami Models with Given Boundary Conditions**

Stephen Keeling[1], and Robert Geretschläger[2]
[1]University of Graz, [2]BRG Kepler Gymnasium

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192 **Using Direct and Constructive Methods for the Existence of Origami Models with Given Boundary Conditions**

Robert Geretschläger[1], and Stephen Keeling[2]
[1]BRG Kepler, [2]University of Graz

Break
St. Anne's College / Department of Engineering Science
15:25 — 15:40

SESSION: Metamaterials
CHAIR: Martin van Hecke
ROOM: Lecture Theatre One, Thom Building, Department of Engineering Science
TIME: 13:45 — 15:25

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197 **Energy Absorption Performance Study on Auxetic Metamaterial Based on Miura Origami**

Ruijun Ma[1], Jianguo Cai[1], Meng Li[2], and Jian Feng[1]
[1]Southeast University, Key Laboratory of C & PC Structures of Ministry of Education, [2]Qian Xuesen Laboratory of Space Technology

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55 **A Modular Origami-inspired Mechanical Metamaterial**

Yunfang Yang and Zhong You
University of Oxford

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60 **Producing Various Shapes of 3D Cell Co-culture Microstructures using a Single Cell Origami Technique**

Qian He, Takaharu Okajima and Kaori Kuribayashi-Shigetomi
Hokkaido University

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3 **A Miura-ori Based Mechanical Metamaterial with Graded In-plane Stiffness**

Yan Chen[1], Jichao Song[1], Jiayao Ma[1], Shixi Zang[1], Ying Zhang[2], and Qiang Zhang[3]
[1]Tianjin University, [2]Tianjin Chengjian University, [3]Liaoning Technical University

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Break
St. Anne's College / Department of Engineering Science
15:25 — 15:40

SESSION: Theory One
CHAIR: Martin Walker
ROOM: Lecture Theatre Two, Thom Building, Department of Engineering Science
TIME: 13:45 — 15:25

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201 **A Generative Shape Grammar for Piecewise Cylindrical Surfaces and Curved-Crease Origami**

Joseph Gattas
University of Queensland

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96 **Kinematic and Kinetostatic Classification for Motion-Task-Oriented Synthesis of Folding Mechanisms**

Jascha Paris, Judith Merz, Henri Buffart, Susanne Hoffmann, Justus Siebrecht, Chantal Weigel, Mathias Huesing, Martin Trautz and Burkhard Corves
RWTH Aachen University

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202 **Multiphysics Origami: Achieving Tunable Frequency Selective Surfaces from Origami Principles**

Larissa Novelino, Syed Nauroze, Emmanouil Tentzeris and Glaucio Paulino
Georgia Institute of Technology

Break
St. Anne's College / Department of Engineering Science
15:25 — 15:40

SESSION: Art and Design One
CHAIR: Mark Bolitho
ROOM: Tsuzuki Lecture Theatre, Ruth Deech Building, St. Anne's College
TIME: 15:40 — 17:45

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7 **Folding Yoshimura Pattern into Large-scale Art Installations**

Jiangmei Wu

Indiana University Bloomington

---

66 **Metamorphograms Cameraless Photography, Memory & Origami**

Alun Kirby

AlunKirby.com

---

188 **Foldable Composites for Architectural Applications**

Joseph Choma

Design Topology Lab, Clemson University

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207 **Conceptual Origami-based Installations**

Anne Rudanovski

Tartu Art College

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211 **Origami Parallels in Textiles and Fashion**

Adrienne Sack

fashion designer

Drinks Reception
St. Anne's College
17:45 — 19:30

Gala Dinner
St. Anne's College Dining Hall
19:30

SESSION: Origami Design
CHAIR: Robert Lang
ROOM: Mary Oglivie Theatre, St. Anne's College
TIME: 15:40 — 17:45

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15 **The Method of Drawing Crease Pattern of Kamiya Pattern and Its Variations**

Yuya Murakami
Tohoku University, Department of Mathematics, Faculty of Science

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29 **Designing Connected Paper Cranes by Using Continued Fractions**

Jun Maekawa
National Astronomical Observatory of Japan

---

54 **Orthogonal Voronoi Molecules**

Robby Kraft
School for Poetic Computation

---

95 **Generalized Offset Pythagorean Stretches in Box-Pleated Uniaxial Bases**

Robert Lang[1], and Mu-Tsun Tsai[2]
[1]Lang Origami, [2]

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141 **The Cosmic Spiderweb and Design of General Origami Tessellations**

Mark Neyrinck
University of Durham

Drinks Reception
St. Anne's College
17:45 — 19:30

Gala Dinner
St. Anne's College Dining Hall
19:30

SESSION: Deployable Structures
CHAIR: Mark Schenk
ROOM: Lecture Theatre One, Thom Building, Department of Engineering Science
TIME: 15:40 — 17:45

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203 **Coupled Origami Tubes for Stiff Deployable Structures**

Glaucio Paulino[1], Evgueni Filipov[2], and Tomohiro Tachi[3]
[1]Georgia Institute of Technology, [2]University of Michigan, [3]University of Tokyo

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11 **Design of an Origami-Inspired Deployable Aerodynamic Locomotive Fairing**

Kyler Tolman, Erica Crampton, Chad Stucki, R. Daniel Maynes and Larry Howell
Brigham Young University

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140 **Deployable Structures Inspired by Insect Wing Folding**

Kazuya Saito[1], Tomohiro Tachi[1], Ryuma Niiyama[1], Yoshihiro Kawahara[1], and Taro Fujikawa[2]
[1]University of Tokyo, [2]Tokyo Denki University

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89 **Deployable Sub-module for Space Solar Power Station Based on Origami**

Yuzhen Tang[1], Meng Li[2], Hongwei Guo[1], Rongqiang Liu[1], Zongquan Deng[1], and Dewei Tang[1]
[1]Harbin Institute of Technology, [2]Qian Xuesen Laboratory of Space Technology

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117 **Deployable Honeycomb Structures**

Rupert Maleczek[1], and Kazuya Saito[2]
[1]University of Innsbruck; Institute of Design —i.sd - Structure and Design, [2]University of Tokyo

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Drinks Reception
St. Anne's College
17:45 — 19:30

Gala Dinner
St. Anne's College Dining Hall
19:30

SESSION: Folded Core Structures
CHAIR: Yves Klett
ROOM: Lecture Theatre Two, Thom Building, Department of Engineering Science
TIME: 15:40 — 17:45

Automated Numerical Process Chain for the Design of Folded Sandwich
85 **Cores**

Fabian Muhs, Yves Klett and Peter Middendorf
University of Stuttgart

Quasi-static Crushing Behaviours of Folded Open-top Truncated Pyramid
35 **Structures with Interconnected Side Walls**

Zhejian Li, Wensu Chen and Hong Hao
Curtin University

Blast Resistant Performance of Cladding with Folded Open-top Trunca-
36 **ted Pyramid Structures as Core**

Zhejian Li, Wensu Chen and Hong Hao
Curtin University

Reality Check — Mechanical Potential of Tessellation-based Foldcore
100 **Materials**

Yves Klett, Marc Grzeschik, and Peter Middendorf
University of Stuttgart

Rectangular Sandwich Plates with Miura-ori Folded Core under Quasi-
76 **static Loadings**

Xinmei Xiang[1], Guoxing Lu[1], Zhong You[2], and Dong Ruan[1]
[1]Swinburne University of Technology, [2]University of Oxford

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Drinks Reception
St. Anne's College
17:45 — 19:30

Gala Dinner
St. Anne's College Dining Hall
19:30

Thursday 6th September

SESSION: Science One
CHAIR: Elvia Daniela Izquierdo-Ruiz
ROOM: Tsuzuki Lecture Theatre, Ruth Deech Building, St. Anne's College
TIME: 9:00 — 10:40

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125 **Graphene-based Bimorphs for Micron-sized, Autonomous Origami Machines**

Itai Cohen, Marc Miskin, Baris Bircan and Paul McEuen

Cornell University

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154 **Computational Modelling of Irregular Virus Shells as flattened polyhedra**

Hamish Todd[1], Antoni Luque[2], Stefan Sechelmann[3], and Ivan Erofeev[1]

[1]University of Edinburgh, [2]San Diego State Univeristy, [3]TU Berlin

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177 **Efficient Origami Construction of Orthogonal Terrains using Cross-Section Evolution**

Amartya Shankha Biswas, Erik D. Demaine and Jason S. Ku

Massachusetts Institute of Technology

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9 **Exploring Space-filling Origami**

Chang Wenwu

PUTUO Institute of Modern Educational technology in Shanghai

Break
St. Anne's College / Department of Engineering Science
10:40 — 11:00

SESSION: Colour Change Origami
CHAIR: Jorge Lucero
ROOM: Mary Oglivie Theatre, St. Anne's College
TIME: 9:00 — 10:40

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8 **Color Change and Pixel-matrix Challenge**

David Dureisseix
Univ Lyon, INSA Lyon

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18 **Exploring A Ring Flexagon**

Ann Schwartz
Fantastic Flexagons

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80 **Optimal Solution Search for the Origami Checkerboard Puzzle**

Kazuki Ohshima[1], Ryuhei Uehara[2], and Jun Mitani[1]
[1]University of Tsukuba, [2]Japan Advanced Institute of Science and Technology

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189 **Counter Productivity in Minimalist Origami**

Jeannine Mosely
Akamai Technologies

Break
St. Anne's College / Department of Engineering Science
10:40 — 11:00

SESSION: Mechanical Behaviour One
CHAIR: Guoxing Lu
ROOM: Lecture Theatre One, Thom Building, Department of Engineering Science
TIME: 9:00 — 10:40

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57 **Modelling of Mechanical Behaviors of Periodic Curved-Creased Origami Structures**

Kailun Huang[1], Xiang Zhou[1], Hai Wang[1], and Zhong You[2]
[1]Shanghai Jiao Tong University, [2]University of Oxford

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98 **Buckling of Thin-walled Cylinders with Diamond Patterns**

Xiaochen Yang, Shixi Zang, Jiayao Ma and Yan Chen
Tianjin University

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112 **Curved-Crease Origami with Multiple States**

Ting Uei Lee[1], Yan Chen[2], and Joseph Gattas[1]
[1]University of Queensland, [2]Tianjin University

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160 **Structural Performance of Foldable Surfaces Based on Miura-ori Textures**

Maurizio Giodice and Francesco Romeo
Sapienza University of Rome

Break
St. Anne's College / Department of Engineering Science
10:40 — 11:00

SESSION: Simulation One
CHAIR: Yoshinobu Miyamoto
ROOM: Lecture Theatre Two, Thom Building, Department of Engineering Science
TIME: 9:00 — 10:40

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99 **Origami Sensitivity - On the Influence of Vertex Geometry**

Luca Zimmermann, Kristina Shea and Tino Stankovic
ETH Zurich

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145 **Modelling the Folding Motions of the Curved Folds**

Yuka Watanabe and Jun Mitani
University of Tsukuba

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137 **Folding 3D Cell Shapes Optimized by Computational Origami**

Kaori Kuribayashi-Shigetomi[1], Takashi Horiyama[2], Qian He[1], and Ryuhei Uehara[3]
[1]Hokkaido University, [2]Saitama University, [3]Japan Advanced Institute of Science and Technology

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187 **Rigid-facet Kinematics Coupled with Finite Bending Rotation Along Crease Lines**

Rostislav Chudoba and Brakhage Karl-Heinz
RWTH Aachen University

Break
St. Anne's College / Department of Engineering Science
10:40 — 11:00

SESSION: Art and Design Two
CHAIR: Curie Scott
ROOM: Tsuzuki Lecture Theatre, St. Anne's College
TIME: 11:00 — 12:40

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70 **Optimisation in Origami Design**

Mark Bolitho
Creaselightning Limited

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73 **ZEBRA - A Heteromodular Origami Technique for Constructing Large-Scale 3D Framework Architectures and Kinematic Linkages from Standard A4 Office Paper**

Eckhard Hennig
Reutlingen University

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190 **Boatbuilding as a Timeless Example of Curved Folding**

Nicholas Orndorff[1], and Robert Orndorff[2]
[1]University of Washington, [2]Microsoft

Lunch
St. Anne's College Dining Hall
12:40 — 14:00

SESSION: Rigid Origami Two
CHAIR: Ryuhei Uehara
ROOM: Mary Oglivie Theatre, St. Anne's College
TIME: 11:00 — 12:40

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24 **Continuous Flattening of Extended Bipyramids with Rigid Radial Edges**

Chie Nara[1], and Jin-Ichi Itoh[2]

[1]Meiji university, [2]Sugiyama Gakuen university

---

106 **Approximating a Target Surface with 1-DOF Rigid Origami**

Zeyuan He and Simon Guest

University of Cambridge

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67 **Conic Crease Patterns with Reflecting Rule Lines**

Erik D. Demaine[1], Martin L. Demaine[1], David A. Huffman[2], Duks Koschitz[3], and Tomohiro Tachi[4]

[1]Massachusetts Institute of Technology, [2]University of California, Santa Cruz, [3]Pratt Institute, [4]University of Tokyo

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52 **Folding Mechanisms with Discriminate Extremal Configurations for Structural Purposes**

Henri Buffart, Susanne Hoffmann, Jascha Paris, Justus Siebrecht, Chantal Weigel, Burkhard Corves and Martin Trautz

RWTH Aachen University

Lunch
St. Anne's College Dining Hall
12:40 — 14:00

SESSION: Mechanical Behaviour Two
CHAIR: Arthur Lebée
ROOM: Lecture Theatre One, Thom Building, Department of Engineering Science
TIME: 11:00 — 12:40

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83 **Energy Absorbing Performance of Metal Thin-walled Tube with a Pre-folded Origami Pattern**

Jiangping Huang, Rongqiang Liu, Hongwei Guo, Yang Song and Jianguo Tao
College of mechanical and electrical engineering, Harbin Institute of Technology

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166 **The Mechanics of Metallic Folds**

Martin Walker[1], and Keith Seffen[2]
[1]University of Oxford, [2]University of Cambridge

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94 **Local Actuation of Tubular Origami**

Steven Grey, Fabrizio Scarpa and Mark Schenk
University of Bristol

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156 **Mechanical Behaviour of Origami Based Helical Structure**

Bing Wang, Fei Wang and Changqing Chen
Tsinghua University

Lunch
St. Anne's College Dining Hall
12:40 — 14:00

SESSION: Fabrication One
CHAIR: Cynthia Sung
ROOM: Lecture Theatre Two, Thom Building, Department of Engineering Science
TIME: 11:00 — 12:40

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45 **Fabrication of Polymeric Origami Tube**

Hairui Wang[1], Danyang Zhao[1], Minjie Wang[1], and Zhong You[2]
[1]Dalian University of Technology, [2]University of Oxford

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82 **Origloo - Bringing Human-Scale Origamic Structures, Design, and Fabrication to the Architectural Masses**

Jakub Novák and Jiří Palacký
Brno University of Technology

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139 **Fold Printing: Using Digital Fabrication of Multi-Materials for Advanced Origami Prototyping**

Matthew Gardiner, Roland Aigner, Hideaki Ogawa, Erwin Reitboeck and Rachel Hanlon
Ars Electronica Linz GmbH & Co KG

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34 **Folding Fabrication of Curved-Crease Origami Spindle Beams**

Wei Qi Cui[1], Timo Gfeller[2], Joseph M. Gattas[1], Dilum Fernando[1], and Michael T. Heitzmann[1]
[1]University of Queensland, [2]ETH Zurich

Lunch
St. Anne's College Dining Hall
12:40 — 14:00

SESSION: History
CHAIR: Emma Frigerio
ROOM: Tsuzuki Lecture Theatre, St. Anne's College
TIME: 14:00 — 15:40

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12 **Recreational Folding in the 20th century: Between Row and Gardner**

Michael Friedman
Humboldt University Berlin

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14 **Froebel's Views on the Role of Paper Folding in Early Mathematics Education**

Arnold Tubis[1], and Patsy Wang-Iverson[2]
[1]Purdue University (retired), [2]Rosenbaum Foundation

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171 **The Mathematical Legacy of Humiaki Huzita**

Emma Frigerio
University of Milano (retired)

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105 **Kozuka with Origami Cranes and a Pine Tree**

Koshiro Hatori
Japan Origami Academic Society

Break
St. Anne's College / Department of Engineering Science
15:40 — 15:55

SESSION: Flat Origami and Tessellations
CHAIR: Matthew Gardiner
ROOM: Mary Oglivie Theatre, St. Anne's College
TIME: 14:00 — 15:40

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50 **Folded States of Single Vertex Origami and Miura-Ori**

Roger Alperin and Jason Orozco
San Jose State University

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93 **Edge Extrusion Approach to Generate the Extruded Miura-Ori and Double Tiling Patterns**

Kai Suto, Akito Adachi, Tomohiro Tachi and Yasushi Yamaguchi
University of Tokyo

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97 **Closed-Back Twists, Counterrotating Twist Tessellations, and Brocard Polygons**

Robert Lang[1], and Roger Alperin[2]
[1]Lang Origami, [2]San Jose State University

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168 **Knot Embeddings in Improper Foldings**

Joseph Slote and Thomas Bertschinger
Carleton College

Break
St. Anne's College / Department of Engineering Science
15:40 — 15:55

SESSION: Robotics
CHAIR: Yan Chen
ROOM: Lecture Theatre One, Thom Building, Department of Engineering Science
TIME: 14:00 — 15:40

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164 **Leveraging Compliance in Origami Robot Legs for Robust and Natural Locomotion**

Xiang Deng and Cynthia Sung
University of Pennsylvania

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172 **The Spinning Cyclic 'Miura-oRing' for Mechanical Collision-Resilience**

Pooya Sareh, Pisak Chermprayong, Marc Emmanuelli, Haris Nadeem and Mirko Kovac
Imperial College London

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158 **Crawling Cylindrical Origami Robot Driven by Single Actuator**

Fuminori Okuya, Takuya Umedachi, Kazuya Saito and Yoshihiro Kawahara
University of Tokyo

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165 **From Atomic Origami Towards Cell-Sized Robotics**

Marc Miskin, Kyle Dorsey, Baris Bircan, Paul McEuen and Itai Cohen
Cornell

Break
St. Anne's College / Department of Engineering Science
15:40 — 15:55

SESSION: Fabrication Two
CHAIR: Kaori Kuribayashi-Shigetomi
ROOM: Lecture Theatre Two, Thom Building, Department of Engineering Science
TIME: 14:00 — 15:40

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38 **Thermoplastic Sheets that Produce Gaussian Curvature from Light**

Amber Hubbard[1], Diana Mong'Are[1], Russell Mailen[2], Jan Genzer[1], and Michael Dickey[1]
[1]North Carolina State University, [2]Auburn University

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169 **Kirigami Fabrication of Shaped, Flat-foldable Cellular Materials Based on the Tachi-Miura Polyhedron**

Sam Calisch and Neil Gershenfeld
Massachusetts Institute of Technology

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204 **Crease Pattern Simplification for Automatic Folding**

Julian Romero[1], Luis Diago[2], Chie Nara[3], Junichi Shinoda[2], and Ichiro Hagiwara[1]
[1]Meiji University, [2]Interlocus Inc, [3]Meiji university

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184 **Development of Origami 3D Printer**

Ichiro Hagiwara[1], Luis Diago[2], Julian Romero[1], and Junichi Shinoda[2]
[1]Meiji University, [2]Interlocus, Inc.

Break
St. Anne's College / Department of Engineering Science
15:40 — 15:55

SESSION: Education One
CHAIR: Patsy Wang-Iverson
ROOM: Tsuzuki Lecture Theatre, St. Anne's College
TIME: 16:00 — 18:05

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71 **A Study of Elementary Teachers' Changing Attitudes Towards Geometry Using the Interactive e-Learning Origametria Program for Teaching Geometry**

Miri Golan
Israeli Origami Center — Origametria

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84 **Origami Impact on Graphic Creative Thinking: a Case Study of 8th-graders in China**

Shihao Feng[1], and Tie Liu[2]
[1]School of Mathematics and Statistics Southwest University, [2]Southwest University Chongqing China

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58 **Educational Concepts for Developing and Designing Origami-Based Structures**

Susanne Hoffmann, Henri Buffart, Jascha Paris, Justus Siebrecht, Chantal Weigel, Burkhard Corves and Martin Trautz
RWTH Aachen University

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131 **Cultivating Design Thinking of Middle School Girls through an Origami STEAM Project**

Norma Boakes
Stockton University

Workshops
Ruth Deech Building, St. Anne's College
20:00 — 21:00

SESSION: Geometric Constructions
CHAIR: Thomas Hull
ROOM: Mary Oglivie Theatre, St. Anne's College
TIME: 16:00 — 18:05

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51 **3D Folding Axioms**

Roger Alperin
San Jose State University

---

122 **Fixed Point Iterative Methods à la Fujimoto**

José Ignacio Royo Prieto
University of the Basque Country UPV/EHU

---

132 **Verifiable Origami Construction**

Geoffrey Ramseyer
Stanford University

---

28 **Folding a 3D Euclidean space**

Jorge Lucero
University of Brasilia

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127 **A Mathematical Exploration of Errors in Origami Structures**

Adam Woodhouse and Abdellah Salhi
University of Essex

Workshops
Ruth Deech Building, St. Anne's College
20:00 — 21:00

SESSION: Theory Two
CHAIR: Joseph Gattas
ROOM: Lecture Theatre One, Thom Building, Department of Engineering Science
TIME: 16:00 — 18:05

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90 **Spherical Image Analysis for Folding Templates**

Daniel Eatough and Keith Seffen
University of Cambridge

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75 **Singular Behaviour on Folding Path Characterised by Rigid Foldability analysis**

Naohiko Watanabe
National Institute of technology, Gifu college

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116 **Lens Tesselation Inspired Surface Approximation**

Rupert Maleczek and Gabriel Stern
University of Innsbruck; Institute of Design —i.sd - Structure and Design

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1 **Degree of Freedom Reduction for Rigid Origami Patterns through Vertex Splitting Technique**

Xiao Zhang, Gaiyun He, Jiayao Ma and Yan Chen
Tianjin University

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62 **Folding Shells**

Florian Tuczek
Freier Architekt

Workshops
Ruth Deech Building, St. Anne's College
20:00 — 21:00

SESSION: Simulation Two
CHAIR: Chie Nara
ROOM: Lecture Theatre Two, Thom Building, Department of Engineering Science
TIME: 16:00 — 18:05

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186 **Highly Efficient Nonlinear Structural Analysis of Origami Assemblages Using the MERLIN2 Software**

Ke Liu and Glaucio Paulino
Georgia Institute of Technology

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142 **Simulating Pleated Tension Folds**

Goran Konjevod
organicorigami.com

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206 **Simulating Origami Facet Bending with a N5B8 Bar and Hinge Model**

Evgueni Filipov[1], Ke Liu[2], Tomohiro Tachi[3], Mark Schenk[4], and Glaucio Paulino[2]
[1]University of Michigan, [2]Georgia Institute of Technology, [3]University of Tokyo, [4]University of Bristol

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162 **Fast, Interactive Origami Simulation using GPU Computation**

Amanda Ghassaei, Erik D. Demaine and Neil Gershenfeld
Massachusetts Institute of Technology

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157 **Computational Design of Cylindrical Honeycomb Cores**

Sachiko Ishida
Meiji University

Workshops
Ruth Deech Building, St. Anne's College
20:00 — 21:00

Friday 7th September

SESSION: Education Two
CHAIR: Norma Boakes
ROOM: Tsuzuki Lecture Theatre, Ruth Deech Building, St. Anne's College
TIME: 9:00 — 10:40

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6 **Creating Directions for Origami using HTML5 JavaScript or Processing**

Jeanine Meyer

Purchase College/SUNY

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17 **An Origami Project for Exploring the Learning of Mathematical Logic**

Maria Luisa Spreafico[1], and Stefania Serre[2]

[1]Politecnico di Torino, [2]S.I.E.S. "A.Spinelli" — Torino

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88 **Learning How to Axiomatize Through Paperfolding**

Dmitri Nedrenco

University of Würzburg

Break
St. Anne's College / Department of Engineering Science
10:40 — 11:00

SESSION: Science Two
CHAIR: Alex Bateman
ROOM: Mary Oglivie Theatre, St. Anne's College
TIME: 9:00 — 10:40

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10 **Origami as a PSS to Make Emotions Tangible in Benefit of Human Health and Wellbeing. Focus on stress.**

Elvia Daniela Izquierdo-Ruiz
Durham University

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21 **Combinatorial Design of Rigidly Folding Quad-Meshes and Multishape Metamaterials**

Peter Dieleman, Niek Vasmel, Scott Waitukaitis and Martin van Hecke
Amolf Amsterdam & University Leiden

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33 **OrigamiSet1.0: Two New Datasets for Origami Classification and Difficulty Estimation**

Daniel Ma, Gerald Friedland and Mario Michael Krell
University of California, Berkeley

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69 **Snap-shaping Soft Origami Sheets**

Anne Meeussen and Martin van Hecke
AMOLF / Leiden University

Break
St. Anne's College / Department of Engineering Science
10:40 — 11:00

SESSION: Design of Origami Structures One
CHAIR: Larry Howell
ROOM: Lecture Theatre One, Thom Building, Department of Engineering Science
TIME: 9:00 — 10:40

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148 **1-DOF Structure Folding into Multiple Polyhedra**

Tomohiro Tachi[1], and Horiyama Takashi[2]
[1]University of Tokyo, [2]Saitama University

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39 **Designing Self-Blocking Systems With Non-Flat-Foldable Degree-4 vertices**

Riccardo Foschi[1], and Tomohiro Tachi[2]
[1]Unibo, [2]University of Tokyo

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153 **An Interactive Design System for Deltahedron-based Modular Origami**

Naoya Tsuruta
Tokyo University of Technology

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144 **Design Methods and Analysis of the Mechanical Properties of Resch Pattern Foldcores**

Xinying Lv and Xiang Zhou
Shanghai Jiao Tong University

Break
St. Anne's College / Department of Engineering Science
10:40 — 11:00

SESSION: Tessellations
CHAIR: Kazuya Saito
ROOM: Lecture Theatre Two, Thom Building, Department of Engineering Science
TIME: 11:00 — 12:40

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61 **Two-Layered Origami Tessellation**

Yohei Yamamoto[1], and Jun Mitani[2]
[1]GIKEN, LTD, [2]University of Tsukuba

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178 **Programmable 3-D Surfaces Using Origami Tessellations**

Hang Yuan, James Pikul and Cynthia Sung
University of Pennsylvania

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138 **Graph Products for Crease Patterns and Truss Frameworks of Origami Structures**

Yao Chen[1], Lin-Zi Fan[2], and Jian Feng[1]
[1]Southeast University, [2]Sanjiang University

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78 **Computation of Local Degree-of-freedom for Tessellation Origami with High Flexibility**

Chen Chu Chai[1], Kok Keong Choong[1], and Jae Yeol Kim[2]
[1]Universiti Sains Malaysia, [2]Hyupsung University

Break
St. Anne's College / Department of Engineering Science
10:40 — 11:00

SESSION: Education Three
CHAIR: Clarissa Grandi
ROOM: Tsuzuki Lecture Theatre, Ruth Deech Building, St. Anne's College
TIME: 11:00 — 12:40

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79 **The Use of Origami in Design Education to Promote Divergent Thinking**

Jason Lin

University of California, Davis

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27 **Solving Sundara Row's "Geometric Exercises in Paper Folding" by Computational Origami System Eos**

Tetsuo Ida

University of Tsukuba

Lunch
St. Anne's College Dining Hall
12:40 — 14:00

SESSION: Rigid Origami Three
CHAIR: Jun Mitani
ROOM: Mary Oglivie Theatre, St. Anne's College
TIME: 11:00 — 12:40

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147 **Thick Rigid Origami with Parallel Double Creases**

Tomohiro Tachi[1], and Thomas Hull[2]
[1]University of Tokyo, [2]Western New England University

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115 **Self-foldability of Monohedral Quadrilateral Origami Tessellations**

Thomas Hull[1], and Tomohiro Tachi[2]
[1]Western New England University, [2]University of Tokyo

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59 **Reversing Cube with Slits**

Naofumi Horio[1], and Jin-Ichi Itoh[2]
[1]Gyokunan junior high school, [2]Sugiyama Jyogakuen University

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Lunch
St. Anne's College Dining Hall
12:40 — 14:00

SESSION: Design of Origami Structures Two
CHAIR: Evgueni Filipov
ROOM: Lecture Theatre One, Thom Building, Department of Engineering Science
TIME: 11:00 — 12:40

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107 **Rigidly Foldable Rotational Erection System (RES)**

Yoshinobu Miyamoto
Aichi Institute of Technology

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77 **Origami Inspired Innovations for Shape Conformance, Wicking, and Structure for Improved Adult Diapers**

Janette Herron, Spencer Magleby and Larry Howell
Brigham Young University

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182 **A Transformable Theatre Design using Rigid Origami and Scissor Units**

Nahid Akram[1], and Sudarshan Krishnan[2]
[1]WATG Architects, [2]University of Illinois at Urbana-Champaign

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Lunch
St. Anne's College Dining Hall
12:40 — 14:00

SESSION: Thick Panel Origami
CHAIR: Simon Guest
ROOM: Lecture Theatre Two, Thom Building, Department of Engineering Science
TIME: 9:00 — 10:40

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174 **Crease-loops That Transform 3D Thick Rigid Origami/Kirigami**

Guowu Wei[1], Lei Ren[2], and Jian S. Dai[3]
[1]University of Salford, [2]University of Manchester, [3]King's College London

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101 **A Novel Origami-inspired Foldable Model with Thick Panels**

Cheng Wang[1], Junlan Li[1], and Zhong You[2]
[1]Tianjin University, [2]University of Oxford

Lunch
St. Anne's College Dining Hall
12:40 — 14:00

SESSION: Keynotes Two
CHAIR: Robert Lang
ROOM: Lecture Theatre One, Mathematical Institute
TIME: 14:00 — 16:00

My Personal Journey Through Origami, Mathematics, and Education

Emma Frigerio
University of Milano (retired)

Geometric Problems in Structural Origami

Tomohiro Tachi
University of Tokyo

Closing

ROOM: Lecture Theatre One, Mathematical Institute
TIME: 16:00 — 16:15

Posters will remain on display in the Mathematical Institute following the closing; tea & coffee will be available.

Posters

SESSION: Posters
CHAIR: Jiayao Ma
ROOM: Mathematical Institute
TIME: 11:30 — 12:30 Wednesday 5th Sept. & after closing on Friday 7th Sept.

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13 **Origami Demonstrations of Area Formulae for General Triangles, Parallelograms, and Trapezoids**

Arnold Tubis
Purdue University (retired)

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20 **ORIGAMI SCISSOR Hinged Geometry Method**

Esther Rivas-Adrover
University of Cambridge

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25 **An Origami Interactive Poster: From Folds to Axioms**

Maria Luisa Spreafico[1], Eulalia Tramuns[2], and Margherita Truffa[1]
[1]Politecnico di Torino, [2]EspaiMat

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40 **Fitting Surfaces with the Miura Tessellation**

Hussein Nassar[1], Arthur Lebée[2], and Laurent Monasse[3]
[1]University of Missouri, [2]ENPC, [3]INRIA

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42 **Origami Tessellations and Modulars: What they have in Common and a New Way of Designing Origami Modulars**

Ekaterina Pavlovic
Recruit Institute of Technology

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47 **Potential of Stress Oriented Foldings**

Juan Musto and Martin Trautz
RWTH Aachen

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193 **Bistable Behaviour of a Deployable Cylinder with Kresling Pattern**

Qian Zhang[1], Jianguo Cai[1], Meng Li[2], and Jian Feng[1]

[1]Southeast University, Key Laboratory of C & PC Structures of Ministry of Education, [2]Qian Xuesen Laboratory of Space Technology

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209 **Origami 3D Typography Tessellation**

Carlos Natan Lpez Nazario

Independent

Workshops

Workshops will be held at St. Anne's College. Please see the notice board for schedule and room assignments.

Filipa Crespo Osório	KOS — Kinetic Origami Surfaces
Jorge Pardo	EMOZ
Miri Golan	The Influence of the e-Learning Origametria Program for Kindergarten Teachers on the Development of Geometric Thinking in Kindergartens
Esther Rivas-Adrover	ORIGAMI-SCISSOR Hinged Geometry Method: Origami with Creases that can Expand and Contract
Hans Dybkjær	Off-grid Tessellations
Jeanine Meyer	An Origami-Inspired adventure in Number Theory and Programming
Jeanine Meyer	A (very) basic math course focusing on origami
Larry Howell	Applied Origami Overview
Koryo Miura	Miura Ori-Aid for Math Classes.
Mitya Miller	Ron Resch Works history
Jakub Novák	Art Installation
Patrick Kinnear	Educational Materials Outreach Project

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