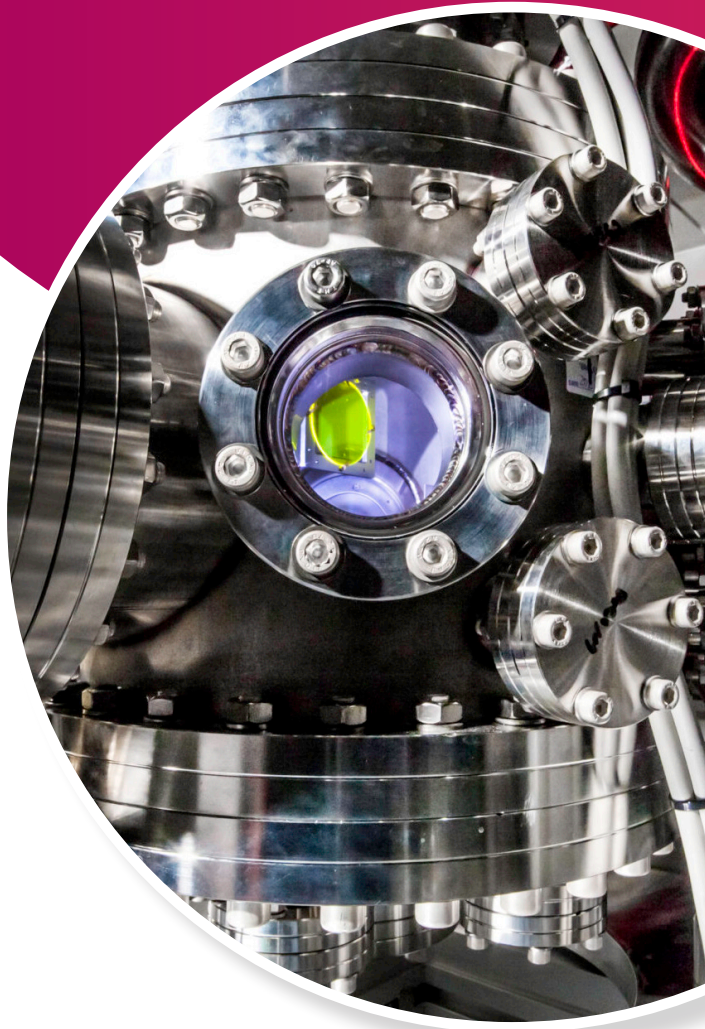
LINAC2022
LIVERPOOL

31st International Linear Accelerator Conference

2022



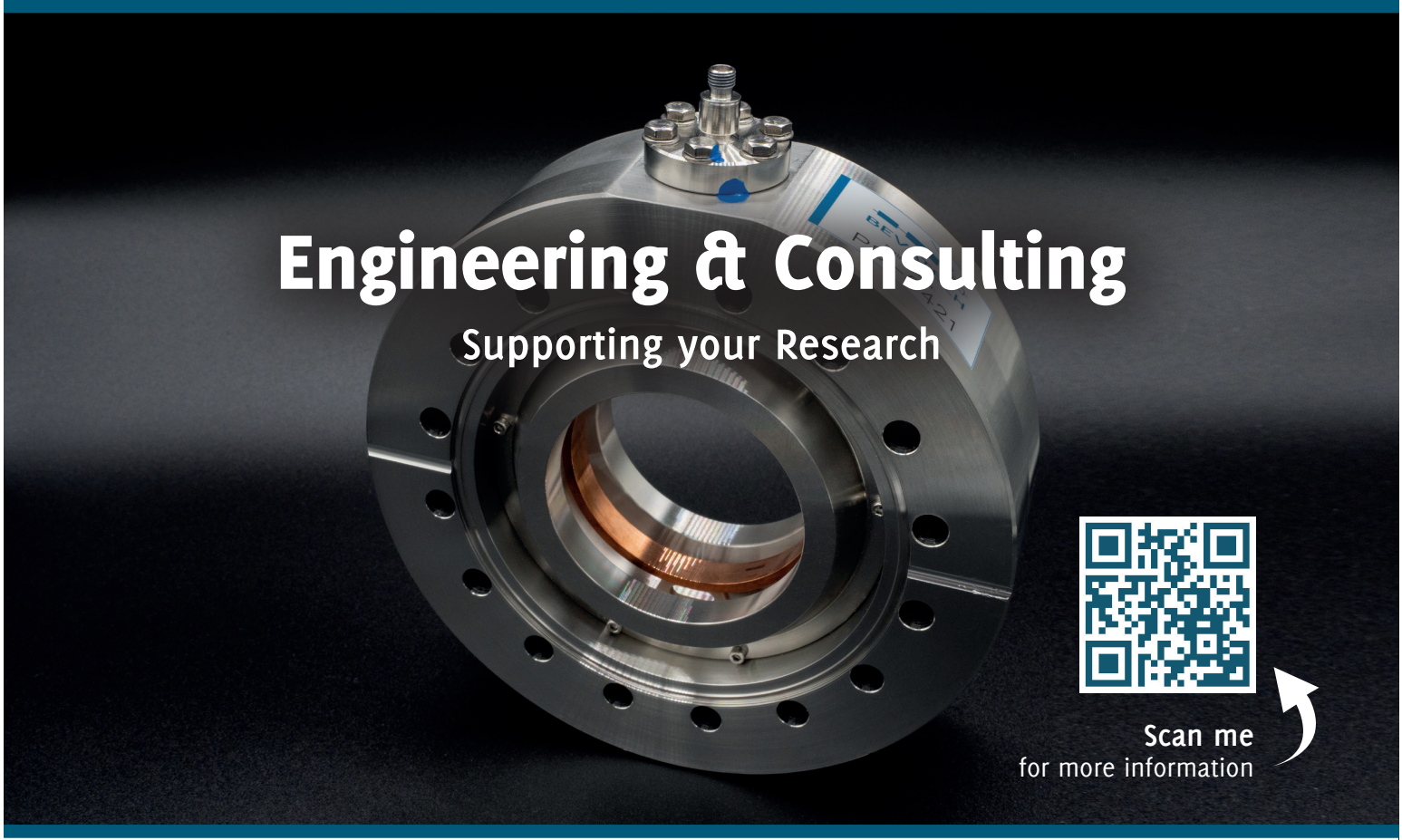
Programme

28th August - 2nd September 2022

The Cockcroft Institute of Accelerator Science and Technology

UKRI Science and Technology Facilities Council

JAI John Adams Institute for Accelerator Science



BEVATECH GmbH
Altenhöferallee 3, D-60438 Frankfurt (Germany)
+49 (0)69-83837347 | info@bevatech.com
www.bevatech.com

BEVATECH

Contents

Providing application solutions
in the field of microwave amplifiers,
laser technology and electronics.

TRUMPF

TRUMPF Hüttinger
generating confidence

Conference Conduct

Free Circulation of Scientists

The principle of the universality of science is fundamental to scientific progress. This principle embodies freedom of movement, association, expression and communication for scientists, as well as equitable access to data, information and research materials. LINAC2022 actively upholds this principle, and, in so doing, opposes any discrimination on the basis of such factors as ethnic origin, religion, citizenship, language, political stance, gender, or age.

Harrassment at Conferences

It is the policy of the LINAC2022 conference that all participants will enjoy an environment which encourages the free expression and exchange of scientific ideas, and is free from all forms of discrimination, harassment, and retaliation. The local and international organisation committee chairs will consult with anyone who have suffered from harassment and will suggest ways of redressing any problems. They will also identify an advisor who will counsel those accused of harassment. The conference organisers may, after due consideration, take such action they deem appropriate, including warning or expulsion from the conference without refund.

Greetings

Welcome from the Conference Chair, SPC Chair and LOC Chair

Dear colleagues,

It is our great pleasure to invite you to the 31st Linear Accelerator Conference (LINAC). In 2022, LINAC will come to England, the birthplace of accelerator science, and take place at the Arena and Convention Centre (ACC) in the beautiful city of Liverpool between 28 August and 2 September 2022. The conference will be jointly hosted by STFC, the John Adams Institute and the Cockcroft Institute.

LINAC is the main bi-yearly gathering for the world-wide community of linear accelerator experts. The conference will provide a unique opportunity to hear about the latest advances in research and developments on linacs and their applications.

Following a long and successful tradition, LINAC2022 will feature invited and contributed talks, as well as poster sessions and an industry exhibition. An interesting scientific programme will be complemented by social events that promote informal knowledge exchange. There are a number of sponsorship opportunities for all those who would like to support the event and gain visibility. Currently, the focus is on a full in-person conference – remote participation will be offered, but limited to selected talks.

Participants will also have the opportunity to see the new CLARA Free Electron Laser test accelerator, plus witnessing the SRF cavity qualification facility providing accelerating cavities for the European Spallation Neutron source in Sweden, each of which being available at the local STFC Daresbury Laboratory.

LINAC encourages in particular students and underrepresented communities to participate and a number of scholarships for students will be offered. Registration will open in January 2022 and we encourage you to register early to secure a place.

We look forward to welcoming you in Liverpool!

Yours sincerely

Peter McIntosh
LINAC2022 International Programme Committee Chair

Graeme Burt
LINAC2022 Scientific Programme Committee Chair

Carsten P Welsch
LINAC2022 Local Organising Committee Chair

About LINAC2022 hosts STFC, CI and JAI

Science and Technology Facilities Council (STFC)

Formed in 2007, STFC are a world-leading multi-disciplinary science organisation, with a goal to deliver economic, societal, scientific and international benefits to the UK and its people – and more broadly to the world. Our strength comes from our distinct but interrelated functions:

- Universities: we support university-based research, innovation and skills development in astronomy, particle physics, nuclear physics, and accelerator science
- Scientific Facilities: we provide access to world-leading, large-scale facilities across a range of physical and life sciences, enabling research, innovation and skills training in these areas
- National Campuses: we work with partners to build National Science and Innovation Campuses based around our National Laboratories to promote academic and industrial collaboration and translation of our research to market through direct interaction with industry
- Inspiring and Involving: we help ensure a future pipeline of skilled and enthusiastic young people by using the excitement of our sciences to encourage wider take-up of STEM subjects in school and future life (science, technology, engineering and mathematics)

STFC support an academic community of around 1,700 in particle physics, nuclear physics, and astronomy including accelerator science, who work at more than 50 universities and research institutes in the UK, Europe, Japan and the United States, including a rolling cohort of more than 900 PhD students.

The Cockcroft Institute (CI)

The Cockcroft Institute (CI) is a partnership between the Universities of Lancaster, Liverpool, Manchester and Strathclyde, and STFC. The core membership comprises the accelerator physics and engineering groups of the partner universities and the Accelerator Science and Technology Centre (ASTeC) of STFC at Daresbury Laboratory.

The CI is the de facto national centre for accelerator R&D in the UK. The institute comprises just over 200 academics, professional accelerator staff, post-doctoral research associates, administrative staff and PhD students, making it probably the largest of its kind in the world. Our activities include world-class R&D in RF-based systems and novel methods of acceleration with major contributions to the realisation of national and international accelerator facilities. Cross-cutting applications allow this expertise to be used to address global challenges in health, security, energy, manufacturing and the environment, and to train the next generation of accelerator experts in areas where there is a recognised international skills shortage. We also inspire school students and the general public through our extensive public engagement programmes.

The institute provides the intellectual focus, educational infrastructure and the essential scientific and technological facilities for accelerator science and technology research and development. This enables CI scientists and engineers to take a major role in innovating future tools for scientific discoveries and in the conception, design, construction and use of the world's leading research accelerators.

John Adams Institute (JAI)

The John Adams Institute for Accelerator Science (JAI) was created in October 2004 in response to an initiative by the Particle Physics and Astronomy Research Council and the Council for

the Central Laboratory for the Research Councils (now merged into the Science and Technology Research Council) to foster accelerator R&D in the universities.

The next generation of particle physics needs the next generation of particle accelerators. The John Adams Institute is a UK and World leading research group dedicated to the research and development of particle accelerators.

Particle Accelerators are the huge machines that boost particles, the smallest components of nature, to speeds very close to the speed of light. Beams of these particles are collided, and in the wreckage new strange particles emerge. By looking at what new particles come out and how they come out, we can learn more about the structure of the universe itself.

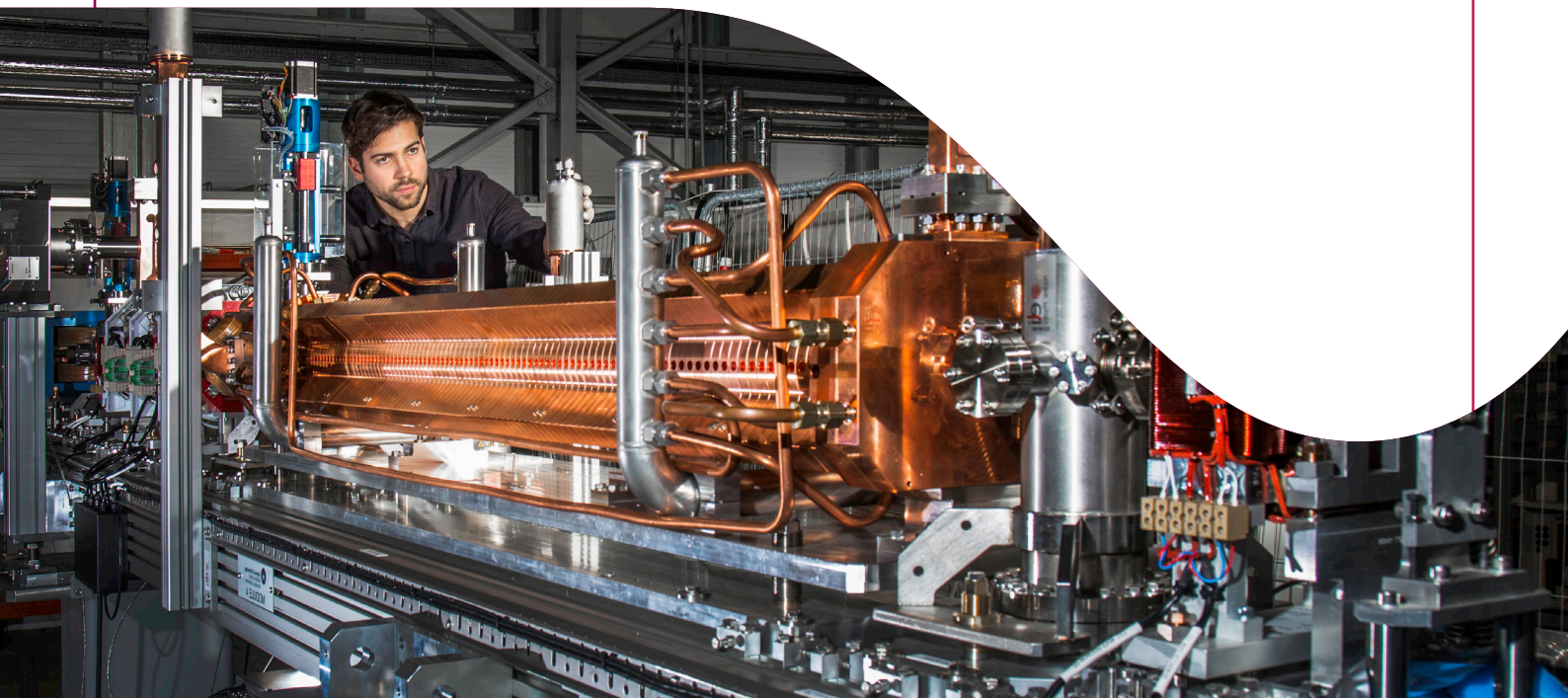
Smaller particle accelerators also exist and these can have applications closer to home such as in Archeology, Zoology and Medicine.

Further information can be found by visiting:

www.stfc.ukri.org

www.cockcroft.ac.uk

www.adams-institute.ac.uk



Important Dates

Abstract Submission Opens	5 January 2022
Registration Opens	5 January 2022
Remote Registration Deadline	24 August 2022
Abstract Submission Deadline	2 May 2022
Student Grant Application Deadline	27 February 2022
Early Registration Deadline	1 June 2022
Late Registration Deadline	31 July 2022
Exhibitor Booth Registration Deadline	31 July 2022
Sponsorship Registration Deadline	30 June 2022
Paper Submission Deadline	24 August 2022
Welcome Reception and Student Poster Session	28 August 2022
Conference Begins	29 August 2022
WISE	30th August 2022
Half-Day Excursions	31 August 2022
Conference Banquet	1 September 2022
Conference Ends and Tour	2 September 2022

General and Local Information

Venue

On the banks of the River Mersey at the heart of the Liverpool's iconic waterfront, ACC Liverpool is a world-class facility in a unique setting. The venue is an interconnected arena, convention and exhibition centre which plays a leading role in shining a spotlight on Liverpool. Since its opening in 2008 the ACC has successfully staged a wide array of national and international events, from shows to conventions, business gatherings to showcase exhibitions.

For further information on how to get to the ACC via air, train or taxi, please visit the website.

Address: Kings Dock, Liverpool Waterfront, Liverpool, Merseyside, L3 4FP
Phone: +44 (0)151 475 8888
Website: www.accliverpool.com

About Liverpool

Liverpool is noted for its Liverpool is noted for its culture, culture, architecture, and architecture, and transport links. The city is closely associated with transport links. The city is closely associated with the arts, especially music; the popularity of the Beatles, widely regarded as the most influential band of all time, led to it becoming a tourist destination. The city also has a long-standing reputation for producing countless for producing countless actors and actresses, actors and actresses, artists, artists, athletes, athletes, comedians, comedians, journalists, journalists, novelists, novelists, and poets. Liverpool has the second highest number of art galleries, national museums, listed buildings, and buildings, and listed parks listed parks in the UK; only the capital, in the UK; only the capital, London, has more. London, has more. In sports, the city is best In sports, the city is best known for being the home of known for being the home of Premier League Premier League football teams football teams Liverpool FC Liverpool FC and Everton FC, with Everton FC, with matches between the two rivals being known as the Merseyside derby.

Several areas of Liverpool city centre carried World Heritage Site status from 2004 until 2021. Its status as a port city historically attracted a diverse population from a wide range of cultures. It is also home to the oldest black community in the UK and the oldest Chinese community in Europe. Natives of Liverpool (and some long-time residents) are formally referred to as "Liverpudlians" but are more often called "Scousers" in reference to Scouse, a local stew made popular by sailors in the city, which is also the most common name for the local accent and dialect.

VISA's

Delegates originating from certain countries will require a visa in order to visit Liverpool. If you need to obtain a visa and would like us to provide you with a visa support letter for your application, please select the appropriate button when completing your registration form.

In order for us to issue you with a visa letter you will need to provide us with your passport information.

Information about visas for international travel to the conference is available at Visa to the United Kingdom.

Requests for Internal process invitation letters

For individuals who are required to secure funding to travel from their laboratory, an official LINAC2022 letter of invitation request can be made by contacting Linac2022@stfc.ac.uk.

Internet

Throughout LINAC2022 free Wi-Fi access is offered to all conference delegates throughout the ACC building. From communal areas such as the coffee shop in the Galleria, to exhibition halls, break-out conference rooms and the auditorium, Wi-Fi access is complimentary and widely available. In addition, delegates are welcome to use the E.On Business Centre for internet and other office-related services.

Covid-19

COVID-19 – 31st International Linear Accelerator Conference 2022

We consider the health and well-being of LINAC2022 participants as our top priority.

England has now moved to a 'Living with Covid' phase and there are no longer any legal restrictions. However the following measures are recommended:

· Being vaccinated against Covid

· Allowing fresh air indoors where possible

· Wearing a face mask in crowded enclosed spaces

We will monitor national and local guidelines closely and update our policies whenever needed. You will find the latest UK guidelines on this page: www.gov.uk/coronavirus

Many thanks for your understanding and support.

Safety and Security

Please wear your LINAC2022 lanyards at all times when within the conference venue.

We would like to reassure our delegates that your safety is always of the absolute utmost importance to us. We want to ensure you have an enjoyable experience when you come to ACC Liverpool and that you remain safe. We have a team of dedicated security and stewarding staff who are highly trained and experienced.

Visitors to ACC Liverpool may have their bags searched. We therefore ask you to consider keeping bags and possessions to a minimum. We would also ask you to consider the size of your bags, no larger than a laptop bag is advisable. Please note that large bags and suitcases may also be searched.

We ask you to remain vigilant. Please alert our team members if you notice anything you feel uncomfortable with. Your safety is paramount to us.

First Aid at Venue

Should first aid assistance be required please contact a member of the ACC Liverpool team. The two first aid rooms are located on the Arena side of the building and stewards will be able to escort you to these rooms. Alternatively, first aid assistance can be called to your location in the building.

In Case of an Emergency

Call 999 in a medical emergency. This is when someone is seriously ill or injured and their life is at risk.
Call 111 if you need urgent medical help or you're not sure what to do. They will ask questions about your symptoms so you get the help you need.

Hospitals

The Royal Liverpool University Hospital
Prescot Street, Liverpool, L7 8XP (13 min drive)
Phone: 0151 706 2000
Website: www.rlbuht.nhs.uk

Liverpool Women's Hospital
Crown St, Liverpool, L8 7SS (9 min drive)
Phone: 0151 708 9988
Website: www.liverpoolwomens.nhs.uk

Walk in Clinics

Liverpool City Centre NHS Walk-in Centre
6 David Lewis St, Liverpool L1 4AP (9 min drive)
Phone: 0151 247 6500
Website: www.merseycare.nhs.uk/our-services/our-sites/liverpool/abacus-beat

St James Health Centre
29 Great George St, Liverpool L1 5DZ (12 min walk)
Phone: 0151 295 3800
Website: www.stjameshealthcentre.co.uk

Pharmacies

Boots Pharmacy
9-11 Church St, Liverpool L1 1DA
Phone: 0151 7093149

Monday – Saturday	08:30 – 19:00
Sunday	11:00 - 17:00

Riverside Pharmacy
Park St, Liverpool L8 6QP (5 min drive)
Phone: 0151 295 9261

Monday – Friday	09:00 – 18:30
Saturday & Sunday	Closed

Website: www.obrienspharmacy.com/pharmacies/riverside-pharmacy/

Public Transportation

Catch the train

Avanti West Coast operates direct services from London Euston to Liverpool Lime Street (with a journey time of just over two hours). Other long-distance rail services also operate into Liverpool Lime Street station.

ACC Liverpool is a 20-minute walk from Lime Street or a short taxi ride. You can also transfer at Lime Street onto the underground Wirral Line trains to James Street station (10-minute walk) or catch the CityLink bus which runs every 12 minutes as a circular service around the city centre and stops at both Liverpool Lime Street and ACC Liverpool. If travelling from outside Merseyside, you can catch an underground train to James Street station from Lime Street, inclusive in the cost of your ticket.

Ring Traveline on 0151 236 7676 for up-to-date information about your bus, train or ferry service. The Traveline is open from 8am – 8pm every day of the week.
Website: www.nationalrail.co.uk

Take the bus

ACC Liverpool is just five minutes' walk from the Liverpool ONE retail development bus station, which also has long distance coach services. Local services connect to a shuttle bus service. We even offer coach drop-off areas adjacent to the King's Dock site.
Website: www.merseytravel.gov.uk

Dress Code

All guests in attendance are required to be fully dressed and wear shoes at all times for their own safety. The venue and organisers reserve the right to deny entry to guests wearing clothing items displaying offensive text and/or images. The dress code for the conference dinner is formal.

Banking and Currency Exchange

The nearest ATM can be found at:
Unit 22 Britannia Pavilion Albert Dock, Liverpool, L3 4AD. A three-minute walk from the ACC.
An alternative ATM is located at:
22 Edward Pavillion, Albert Dock, Liverpool, L3 4AD. Also a three-minute walk from the ACC.

Official Language

The official working language at the conference is English and no translation is offered.

Liability and Insurance

The organisers are not liable for damages and/or losses of any kind which may be incurred by the conference delegates or by any other individuals accompanying them, both during the official activities as well as going to/from the conference. Delegates are responsible for their own travel and belongings.

Climate

	August	September
Avg. Temperature (°C)	15.3	13.4
Min. Temperature (°C)	11.5	10
Max. Temperature (°C)	19.1	16.9
Precipitation / Rainfall (mm)	78	80

You won't need gloves, you might need a couple of sweat shirts/ hoodies, waterproof walking shoes, kagoul. Weather can vary massively in Liverpool! We've had long warm spells in September but the next day could be raining and cold. So, a warm jacket/raincoat is advisable and layers in case it gets warm.

Tipping

There is no hard rule when it comes to tipping in the United Kingdom. No-one should feel obligated to tip but if the situation comes up, you can.

Smoking ban

Smoking is banned in all indoor public places, restaurants and bars in Liverpool. The conference is a no-smoking event and smoking is not permitted at the venue.

Electricity

UK appliances are fitted with a three-pin plug. Wall sockets have a switch controlling power supply. Adapters are easy to find; if your country uses lower voltage than the UK average of 230V, you may also need a converter.

Accessibility

Venue Access

The venue is accessible via access ramps from the city, car park and taxi drop off. All steps have designated support railing for assistance. Access to the Galleria (main entrance level for ACC Liverpool) is situated on the same level as the exit from the car park. The entrance doors are double automatic doors and are always staffed when an event is taking place.

The Galleria flooring is slate. The Visitor Services Desk is situated on the Galleria level, this is the main reception point for the building and also can provide local information, taxi bookings etc for delegates. There are two lifts which are available from the Galleria to both the Upper and Lower floors.

Each lift has an accessible width of 1,300 mm and visual and audible floor indicators. There are also escalators which can be used to reach the other levels, stewards are situated at both the top and bottom to assist delegates. On the main conference level all rooms are on the same level and stewards are positioned to assist disabled delegates. The conference level lighting is bright and there are contrasting colours to assist with navigation and for access doors. The conference level is all carpeted. The lower level is also all on the same level and is fully carpeted. In Hall 1 (main auditorium tiered seating) there are 12 designated spaces for wheelchair users and assistants, these spaces can be used for assistance dogs. Hall 1 is also accessible on two different levels with the lower level having level access to the main stage.

Hearing Assistance

Once inside the building, the Visitor Services desk features a fixed loop hearing system. An infra-red system is available in specific seating areas for conference use, a necklace can be collected from a member of ACC staff. In the case of an emergency, trained stewards will assist any delegates with a hearing impediment to evacuate the building. Should any delegate require additional assistance for accessibility needs, please contact the conference organising team.

Assistance Dogs

ACC Liverpool welcomes delegates with assistance dogs. Please ensure that your assistance dog is clearly identifiable when entering the building to ensure that our Stewards are aware of their presence.

Policies

Data Collection and Reporting

To understand the diversity of the delegates attending LINAC2022, both online and in person, we are asking delegates to complete some demographic information when registering. Providing this personal data is voluntary and all personal data will be kept stickly confidential. The data will be used to help the conference organisers determine if we are meeting our diversity goals and identify where we may need to focus attention for future conferences and events. This data will only be used for generating conference statistics and will be optional to provide. The overall statistics will be made publicly available on our website after the conference.

Non-discrimination and Anti-harassment Policy

It is the policy of the LINAC2022 conference that all participants will enjoy an environment which encourages the free expression and exchange of scientific ideas, and is free from all forms of discrimination, harassment, and retaliation. In the event of an incident of bullying or harassment, the local and international organisation committee chairs will consult with anyone who has been subjected to harassment and will suggest ways of redressing any problems. They will also identify an advisor who will counsel those accused of harassment. The conference organisers may, after due consideration, take such action they deem appropriate, including warning or expulsion from the conference without refund. If you are being harassed, notice that someone else is being harassed, or have any other concerns, please contact Tessa Charles (tessa.charles@liverpool.ac.uk) or a member of organising committee.

Harassment includes: offensive verbal comments, sexual images visible in public spaces, deliberate intimidation, stalking, harassing photography or recording; sustained disruption of talks or other events; inappropriate physical contact, and unwelcome sexual attention.

Exhibitors in the Industrial Exhibition are also subject to the anti-harassment policy.

Participants are expected to follow these rules through the entire conference, including every event of the scientific program, on the online platform, and at the conference social events.

Equality, Diversity and Inclusion

The organisers of LINAC2022 are committed to removing barriers which may prevent certain groups in the community from attending or participating in the conference to ensure attendance at conferences represents a cross section of the community.

We have adopted several policies that attempt to ensure the conference environment is inclusive of all people, regardless of their race, ethnicity, gender, sexual orientation, age, physical abilities, or religious beliefs.

Diversity and Representation

The Scientific Programme Committee of LINAC2022 aims to achieve a diverse range of speakers from the accelerator community. Effort is invested to ensure diversity in speakers across regions, gender, and career level. The data on speaker, delegate and committee diversity will be made available on the conference website.

Inclusivity

We have some measures in place to establish an inclusive conference. At the conference venue, a quiet room will be available for delegates who wish to pray or to take a break for the regular conference programme. There will also be parent rooms available where delegates with small children can watch the live stream of the talks.

Why does LINAC2022 registration ask for my pronouns?

LINAC2022 seeks to create a safe space for all participants. Pronouns are what we use when referring to someone without using their name (e.g. he/him, she/her, they/them). By asking for your personal pronouns, we are ensuring that no delegate is accidentally misgendered. Even if you think this is unlikely to be a problem for yourself, including pronouns on your name badge can help make other LINAC2022 delegates comfortable sharing their pronouns. We hope you will consider this.

How can delegates contribute to fostering an inclusive atmosphere?

All members of the accelerator community can contribute to establishing an inclusive environment.
We can do this by:

- Practicing respectful communication
- Making space for other voices
- Giving credit appropriately
- Criticising respectfully and constructively
- Including pronouns on your name tag when registering
- Contacting the conference organisers if you have concerns

Registration

For more information about Exhibitor, Delegate, Companion or Student registration, please visit the website.

Conference App

The LINAC2022 app can be downloaded for iOS and Android.

· iOS: apps.apple.com/us/app/linac2022/id1633229675

· Android: play.google.com/store/apps/details?id=com.LINAC2022

Student Grants

Financial support will be available to a selected number of students registered for a PhD or degree in accelerator physics or engineering, to offset the cost of the conference registration fee and shared accommodation. Supported students will be expected to assist the speakers and delegates during the conference sessions, as well as in registration formalities and/or excursions.

In order to be considered for support, students must register for the conference as student and participate in the special student poster session. Students awarded financial support must arrive in Liverpool before Sunday, 28 August 2022 at noon, so that they can attend an orientation and training session on the Sunday afternoon.

For more information on how to apply for financial support, please visit the website.

All applications and recommendations must be received before 31st March 2022. Successful applicants will be notified by end of April 2022.

Student Poster Session

A special poster session for students will take place on Sunday, 28th August 2022, 16:00 – 18:00 in the Exhibition Hall (Hall-2) of the ACC Conference Centre. The student category applies to students registered for a Ph.D. or degree in accelerator physics or engineering.

All students are welcome to present their work and compete for the £1,000 First place and £500 Second and Third place cash prizes which will be awarded for the best three posters presented during the session, as decided by a group of judges from the conference Organising and Scientific Programme Committees.

These prizes will be awarded to the winners during the dedicated plenary session on Thursday,
1st September, 12:00-12:30. The First-place prize winner will be called to give a twenty-minute oral presentation of the posters' work on Thursday, 1st September, 12:10-12:30 in the ACC Main Auditorium.

Prizes will be awarded based on:
– The quality of both the scientific work and the poster
– The professionalism of the interaction with the judges at the poster
– The promise for the future

First Prize

The winner will receive a cash prize of £1,000 and will be called to give a twenty-minute oral presentation of the poster work on Thursday, 1 September, 12:10-12:30 in the ACC Main Auditorium.

Second and Third Prizes

Each winner will receive a cash prize of £500.

Posters should be mounted between 15:00 – 16:00 on Sunday, 28th August 2022, and students should remain next to their poster from 16:00 – 18:00. Posters can remain in place until following the Welcome Reception ending at 20:00.

All students receiving a grant to attend the conference must present their work in this session and submit a contribution to the proceedings.

All delegates and exhibitors are encouraged to visit the student poster session.

Scientific Programme Information

Sunday 28th August	
14:00	Registration in the ACC
16:00	Student Poster Session
18:30	Welcome Reception
20:00	

Monday	
MO1A	Chair: Graeme Burt
08:30	Registration
09:00	Welcome: Peter McIntosh
09:15	Welcome and introduction of UK accelerators: Jim Clarke (STFC)
09:30	ISIS Linac upgrade/FETs: Alan Letchford (STFC)
10:00	Completion of FRIB Beam Commissioning: Tomofumi Maruta (FRIB)
10:30	Coffee
MO2A	Chair: Hans Weise
11:00	The Cool Copper Collider: Emilio Alessandro Nanni (SLAC)
11:30	LCLS-II Commissioning: Daniel Gonella (SLAC)
11:50	The FLASHForward Experiment at DESY: James Chappell (Oxford)
12:10	Electron-Ion Collider e-cooling Injector and ERL: Erdong Wang (BNL)
12:30	Lunch
MO1P	Chair: Stefan Choroba
14:00	Beam Commissioning and Integrated Test of the PIP-II Injector Test Facility: Eduard Pozdeyev (Fermilab)
14:20	Beam commissioning of normal conducting part and status of ESS project: Ryoichi Miyamoto (ESS)
14:40	First years of Linac4 RF operation: Suitbert Ramberger (CERN)
MOOP	Chair: John Byrd
15:00	**Oral Posters**
MOPO	
16:00	**Posters**

Tuesday	
TU1A	Chair: Catherine Madec
08:30	Status and Challenges of Nb/Cu SRF Cavities for Superconducting Linac: Mengxin Xu (IMP/CAS) REMOTE
08:50	Compact, Turn-key SRF Accelerators: Neil Stilin (Cornell)
09:10	R&D towards High Gradient CW SRF Cavities: Daniel Bafia (FNAL)
09:30	SWELL and other SRF split cavity development: Franck Peauger (CERN)
09:50	Progress of Shanghai High repetition rate XFEL aNd Extreme light facility (SHINE): Bo Liu (SARI SSRF) REMOTE
10:10	Next-generation Nb3Sn Superconducting RF Cavities: Nicole Verboncoeur (Cornell)
10:30	Coffee
TU2A	Chair: Deepak Raparia
11:00	Overview of ADS projects in the world: Bruce Yee Rendon (JAEA/J-PARC)
11:30	SPIRAL2 Final Commissioning results: Angie Karina Orduz (GANIL)
11:50	Status and beam commissioning of the RAON superconducting linac: Myeun Kwon (IBS)
12:10	High duty commissioning of IFMIF Prototype Accelerator: Kai Masuda (QST) REMOTE
12:30	Lunch
TU1P	Chair: Sami Tantawi
14:00	A Retrospective Look at Electron Guns for the Next Generation of High Brightness Injectors: Thomas Geoffrey Lucas (PSI)
14:20	Low intrinsic emittance in space-charge dominated photoinjectors: Jared Maxson (Cornell)
14:40	The physics of transverse emittance manipulations: Bruce Carlsten (LANL)
TUOP	Chair: Paolo Craievich
15:00	**Oral Posters**
TUPO	
16:00	**Posters**
18:00	
	WISE Event
21:00	

Wednesday	
WE1A	Chair: Lars Groening
08:30	ECR ion sources for high-intensity heavy ion beams: Hongwei Zhao (IMP/CAS) REMOTE
08:50	FACET-II: Christine Clarke (SLAC) REMOTE
09:10	Fully Automated Tuning and Recover of a High Power SCL: Andrei P. Shishlo (ORNL)
09:30	AWAKE Run 2: Giovanni Zevi Della Porta (CERN)
09:50	The Muon Linac Project at J-PARC: Yasuhiro Kondo (JAEA/J-PARC)
10:10	A new paradigm for ultra-low emittance muon beam generation based on E.R.L.: Camilla Curatolo (INFN-Milan)
10:30	
WE2A	Chair: Sandra Biedon
11:00	The CompactLight design study: Andrea Latina (CERN)
11:30	RELIEF: Tanning of leather with e-beam: Robert Apsimon (Lancaster University/ Cockcroft)
11:50	Medical Radioisotopes Production Focusing on Ra-225/Ac-225, Cu-67 and Mo-99/Tc-99m Using an Electron Linear Accelerator: Takahiro Tadokoro (Hitachi)
12:10	Data Analysis and Control of a MeV Ultrafast Electron Diffraction System using Machine Learning: Mariana Andrea Fazio (UNM-ECE)
12:30	**Outing**

Thursday	
TH1A	Chair: Bob Laxdal
08:30	Nitrogen gas-jet curtain for windowless helium gas cell equipped with differential pumping systems: Hiroshi Imao, RIKEN REMOTE
08:50	Successful Beam Operation at 33 MV/m in STF-2 Cryomodule at KEK for ILC: Yasuchika Yamamoto (KEK) (REMOTE)
09:10	Developments Towards FRIB Upgrade to 400 MeV/u for Heaviest Uranium Ions: Kellen McGee (FRIB)
09:30	Spatiotemporal Structure in Intense THz Pulsed Beams: George Albert Hine (ORNL)
09:50	R&D of liquid lithium stripper at FRIB: Takuji Kanemura (FRIB)
10:10	Advanced low level RF (LLRF) control algorithms for CERN's proton LINAC4: Philippe Baudrenghien (CERN)
10:30	Coffee
TH2A	Chair: Peter McIntosh
11:00	High extraction efficiency operation of oscillator-type Free Electron Laser driven by a normal conducting linac: Heishun Zen (Kyoto University)
11:20	RF system Performance in the SwissFEL Linac: Carl Beard (PSI)
11:40	Accelerator development for Global Security: Sandra Biedron (Element Aero)
12:00	Student Prizes
12:30	Lunch
TH1P	Chair: Jean Delayen
14:00	Prototype Cryomodules for the SHINE Free Electron Laser at Shanghai: Yiyong Liu (ZJLab) REMOTE
14:20	Production, tests and installation of the ESS spoke, medium and high beta cryomodules: Cecilia Maiano (ESS)
14:40	Crab and deflecting cavity development for linear accelerators: Peter McIntosh (STFC)
THOP	Chair: Hakan Danared
15:00	**Oral Posters**
THPO	
16:00	**Posters**
19:00	
	Conference Banquet
01:00	

Friday	
FR1A	Chair: Dan Fairdoth
08:30	Beam Commissioning and Operation Status of LEAF: Yao Yang (IMP/CAS) REMOTE
08:50	CSNS-II superconducting linac design: Jun Peng (IHEP/CSNS) REMOTE
09:10	Status and challenges at TRIUMF ISAC facility: Zhongyuan Yao (TRIUMF)
09:30	SARAF commissioning: Injector, MEBT and Chopper: Jonathan Dumas (CEA-IRFU)
09:50	Design Considerations for a Proton Linac for a Compact Accelerator Based Neutron Source: Bob Laxdal (TRIUMF)
10:10	Nanoparticle assisted laser-wakefield acceleration of electron beams to 10 GeV at the Texas Petawatt Laser: Bjorn Manuel Hegelich (U Texas)
10:30	Coffee
FR2A	Chair: Graeme Burt
11:00	Experimental demonstration of exponential growth of FEL radiation pilot by a plasma wakefield accelerator both laser and particle driven: Luca Giannessi
11:30	The future of medical linacs: Jonathan Farr (AVO)
12:00	Closing
13:00	
	Laboratory Tour
18:00	

Excursions

All conference delegates will be given the opportunity to join one excursion on the Wednesday afternoon. Spaces on all tours are limited, so please book early and ensure you indicate your tour when registering for LINAC2022 to secure a place. Please note that lunch and evening meal will be provided for all excursions. You can find more information on the **website**.

Social Programme

Welcome Reception and Student Poster Session
Sunday, 28th August
18:30 – 20:00
The ACC, Hall 2

Conference Banquet
Thursday, 1st September
19:00 – 00:30
St George's Hall

To find out more about the Conference Banquet, please visit the LINAC2022 website **linac2022.org/social-programme**.

Laboratory Tour

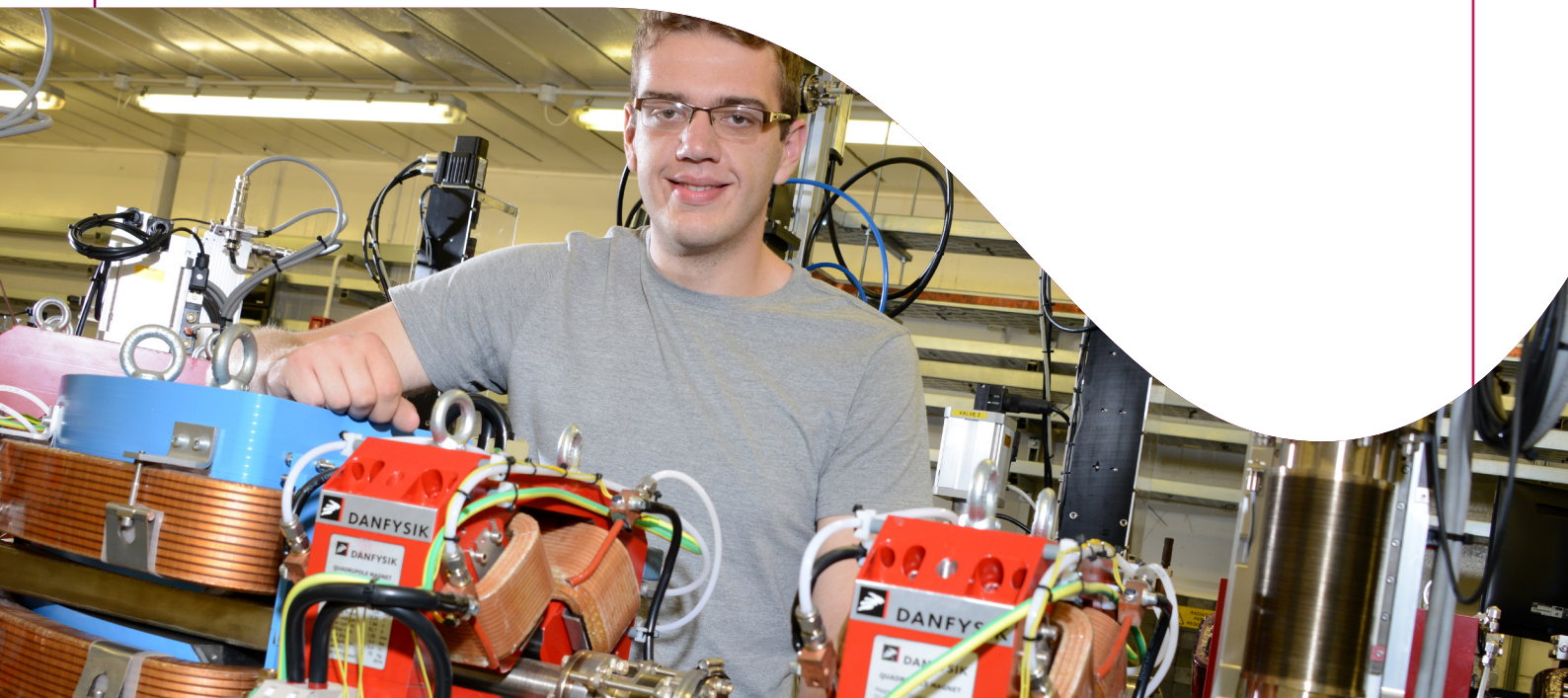
Guided tours of the facilities at Daresbury Laboratory will be available on Friday, 2nd September 2022.

The tour is free and includes bus transportation between the Arena and Convention Centre and Daresbury Laboratory. Please select the option when you register for the conference online if you would like to attend.

Travelling time from The ACC is approximately 45 minutes and tours will be at Daresbury Laboratory. More information on this will be added in Spring 2022 once the scientific programme has been finalised. Please check again later.

To accommodate the anticipated volume of delegates wishing to take the tour, please reserve your place in advance.

All guests must review safety information before starting the tour. Appropriate footwear should be worn on the tour route.



Woman in Science and Engineering (WISE) Event

Tuesday 30th August from 18:00
Venue: Main Auditorium
Light refreshments will be provided.
We encourage people of all genders and career stages to attend.

"The authority gap is the mother of all gender gaps. If women aren't taken as seriously as men, they are going to be paid less, promoted less and held back in their careers. They are going to feel less confident and less entitled to success." - Marie Ann Sieghart, Author

---

Our theme for this year is The Gender Authority Gap - the subconscious bias that assumes women are less capable than their male counterparts until they prove otherwise. This burden of proving one's competence hinders communication and collaboration in the workplace.

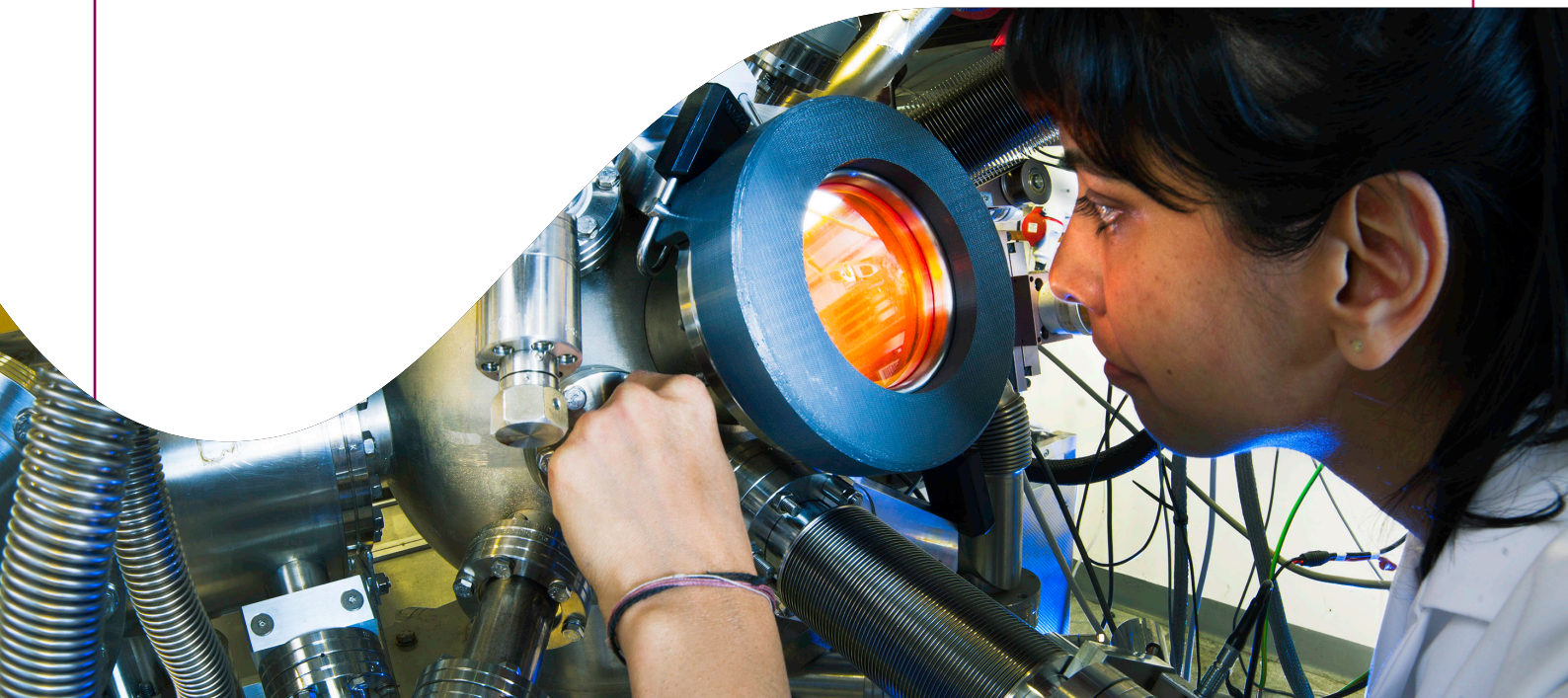
The event will feature a speaker and a panel discussion. We aim to provide the audience a list of actionable items, practical steps everyone can take to help close the gender authority gap regardless of their gender, career stage or position. If you have a question for the panel or a specific topic you would like to address, please email the organizing committee at linac.wise@gmail.com or scan the QR code on the following page.

Speaker

Prof Averil MacDonald, OBE (for services to women in science), Emeritus Professor at the University of Reading and recently retired Professor of Inclusion and Equality at University of Birmingham.

Panel members

Prof. Averil Macdonald
Dr Kate Carruthers Thomas, Senior Research Fellow at Birmingham City University,
Dr Yolandi Woest, Lecturer at the University of Pretoria & visiting scholar at Bath Spa University, UK
Elisabeth Donnelly, CEO of the Women's Engineering Society
Lillemor Dahlgren, gender equality coordinator, University of Gothenburg



To raise awareness of this daily experience, we invite you to **anonymously** submit your experiences related to presumptions of authority. The collection of stories will be filtered by the WISE organizing committee into themes that our panel of experts will help guide us on. To submit a narrative please visit the WISE event page at linac2022.org or scan a QR code below on the right.

We understand that reflecting on your experience is intellectual and emotional work, and not everyone has the capacity for it right now. To thank you for taking the time and courage, we will randomly select a submission to **win a book** by one of our expert panelists, Dr. Kate Thomas – "Five 'Survive' Lockdown", a graphic novella highlighting the COVID-19 lockdown experience of women in different career stages in academia; or the work that inspired the topic of our event: "The Authority Gap" by Marie Ann Sieghart. The winners will be announced via email at the end of the conference. Please remember your story ID to claim the prize. Postage will be covered by the WISE organizing committee.

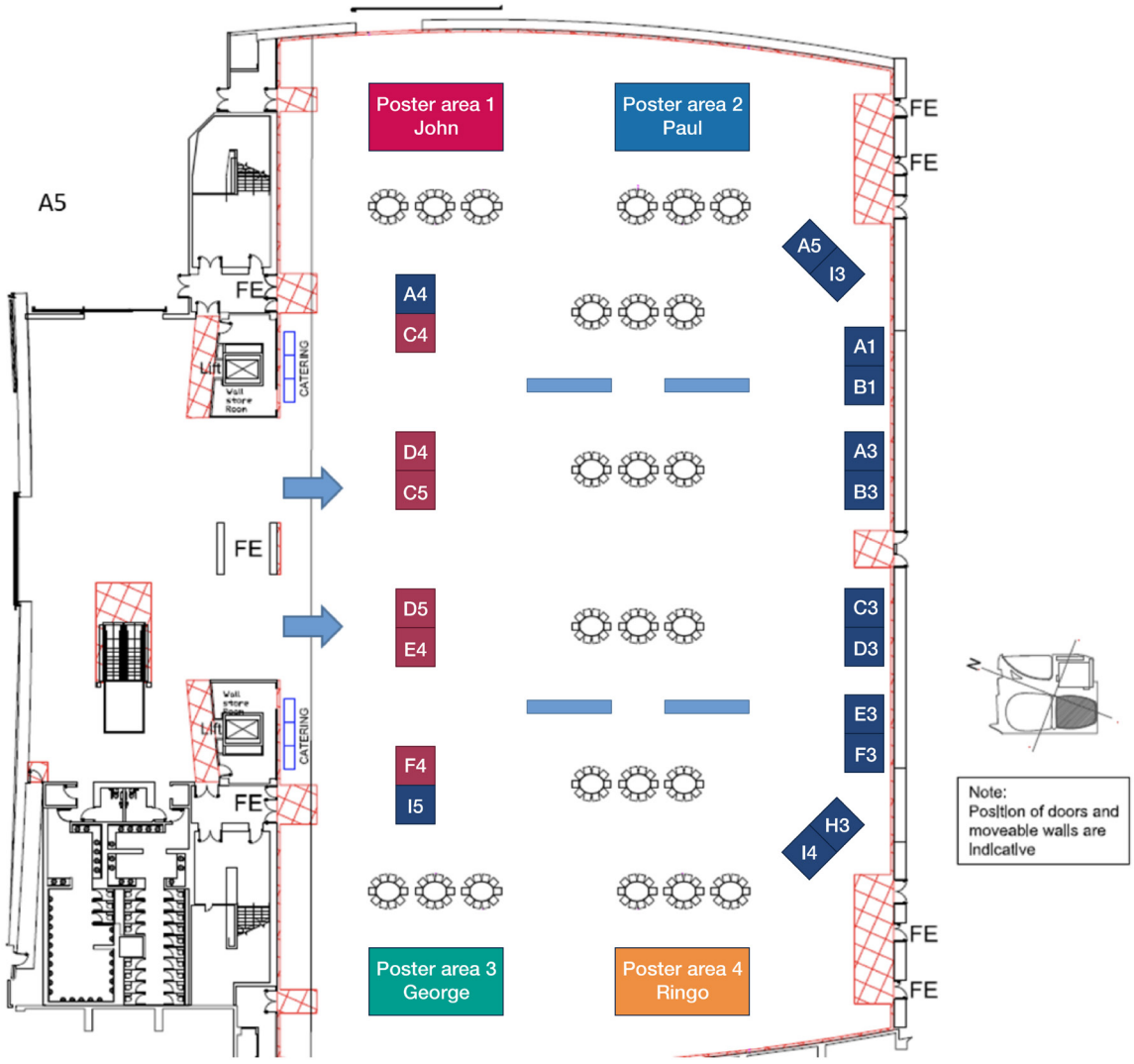
To help us improve future WISE sessions, please, take a minute to complete a survey at the end of the evening at app.sli.do Event code **3644258**.

Send an email

Complete a survey

Share a story

Exhibition hall



Booth	Company
C5	BEVATECH GmbH
D5	Instrumentation Technologies, d.o.o
C4	Scandinova Systems AB
D4	RI Research Instruments GmbH
E4	Kashiyama Europe GmbH
F4	Wessington Cryogenics
A5	Science and Technology Facilities Council (STFC)
A4	Allectra
A1	Oak Ridge National Laboratory
B1	Pantechnik

Booth	Company
A3	Microwave Techniques LLC
B3	Diversified Technologies, Inc.
C3	Jema Energy
D3	UHV Design
E3	Microwave Amps Ltd.
F3	SAES Getters SpA
H3	Bergoz Instrumentation
I3	University of Liverpool / Cockcroft Institute
I4	Zanon Research & Innovation S.R.L
I5	Trumpf Hüttinger GmbH & Co KG

Sponsors

Booth C5

BEVATECH was founded in 2004 by 4 physicists as an independent consultancy. Today the company has physicists working together with engineers and a portfolio of well proven suppliers. BEVATECH's core competence is designing and setting up linear accelerators, RF and vacuum technology. To deliver end-to-end solutions our offerings are complementary to large technology providers combining off-the shelf products and tailored components.

We accompany projects from concept to first beam and handover to operation. While our team designs, simulates and supervises the de-velopment of your accelerator we work closely together with the me-chanical engineering industry and the RF power amplifier industry to deliver a full linear accelerator. On-site, we set up the accelerator, tune & test it for first beam. After successful commissioning the LINAC is handed over to the operations team at the client's facility.

BEVATECH co-operates closely with the Institute for Applied Physics, Goethe University, Frankfurt, Germany. We encourage graduate stu-dents and postdocs to experience commercial developments while re-maining parallel in their field of education. In linear accelerator technology we transfer the latest results from fundamental research into operating industry-ready solutions.

BEVATECH is DIN EN ISO 9001:2015 certified.

bevatech.com

Sponsors

Booth D5

i-tech.si

Sponsors

ScandiNova

Booth C4

scandinovasystems.com

research instruments

Booth D4

research-instruments.de

Sponsors

Kashiyama
Vacuum Solutions

Booth E4

Kashiyama is a Japanese manufacturer of reliable and low-maintenance dry Multi-Stage Roots Pumps offering a wide range of pumping speed options from 7 m³/h to 300 m³/h with the NeoDry series.

The roots of the pump rotate without mechanical contact inside so no particles such as PTFE tip seal dust are generated. NeoDry series is gap-sealed and requires no oil sealant, thus no oil vapor will contaminate the equipment. With over 10 years of market-proven reliability, this pump enables, on average, 6 years of maintenance-free operation handling high moisture content up to 600g/h.

Since our founding in 1951, we have supplied Multi-Stage Roots and Screw Vacuum Pumps for accelerators, analytics and semiconductors, and continue to be the market leader in Japan to this day.

From 2018, Kashiyama had opened a new way for European customers with “Made in Japan Quality”.

Being one of the world-class manufacturers of dry and particle free vacuum pumps, Kashiyama has established Kashiyama Europe GmbH for European and UK customers. The growing Munich team will support you in all matters of sales and service.

de.kashiyama.com

WESSINGTON
CRYOGENICS

Booth F4

wessingtoncryogenics.com

Sponsors

Science and Technology Facilities Council

Booth A5

STFC is a world-leading multidisciplinary science organisation, and the goal is to deliver economic, societal, scientific and international benefits to the UK and its people – and more broadly to the world.

STFC supports research in astronomy, physics, and space science, and operate world class research facilities for the UK. It is part of UK Research and Innovation (UKRI). Launched in 2018, UKRI is a single, strategic body comprised of the seven Research Councils (including STFC), Innovate UK and Research England.

2700 staff are deployed across six locations in the UK, plus CERN in Geneva, Swizerland, and the Isaac Newton Group Telescopes, in La Palma on the Canary Islands. STFC operates major science facilities across the UK, including the Diamond Light Source, the ISIS Neutron and Muon Source, the Central Laser Facility, the Hartree National Centre for Digital Innovation, and the UK Astronomy Technology Centre.

The Accelerator Science and Technology Centre (ASTeC) within STFC is a centre of excellence which brings together all of the skills and expertise required to develop world class accelerators for the UK's future research needs.

ukri.org/councils/stfc

Sponsors

allectra
A future with vacuum

Booth A4

Allectra is a leading manufacturer and supplier of high vacuum and uhv components including custom items.

The company was founded in 2002 by two physicist entrepreneurs to bring a new approach to manufacturing high technology components to the scientific instruments market. In the last twenty years Allectra has seen widespread adoption of its proprietary technology across multiple scientific disciplines.

Allectra has three manufacturing facilities with scientific and engineering capabilities, one in the UK and two in Germany, and ships worldwide.

We specialise in vacuum connectivity, signals and custom manufacturing of complex projects in high vacuum or uhv. Our product range includes electrical feedthroughs and associated cables, KAP301 radiation resistant wires, optics components and Allectra designed components.

allectra.com

Sponsors

OAK RIDGE National Laboratory

Booth A1

Oak Ridge National Laboratory delivers scientific discoveries and technical breakthroughs needed to realize solutions in energy and national security and provide economic benefit to the nation.

ORNL is home to 5,800 scientists, engineers, technicians, and support staff representing more than 60 nations. We are driven by our shared purpose to meet the world's biggest challenges with intelligence, creativity, and teamwork.

We apply a remarkable portfolio of scientific expertise and world-class facilities and equipment to develop scientific and technological solutions.

neutrons.ornl.gov

PANTECHNIK
Boost Your Physics

Booth B1

Pantechnik has been dedicated to proudly serve particle accelerators community for almost 30 years.

Our customers are located all over the world, from big research facilities to regional physics lab, including industrial companies dedicated to health, analysis, safety…
Pantechnik was created to promote the technology of ECR ion sources.

pantechnik.com

Microwave TECHNIQUES LLC

Booth A3

microwavetechniques.com

Sponsors

DIVERSIFIED TECHNOLOGIES, INC.®

Booth B3

Diversified Technologies, Inc. (DTI), a privately held company headquartered in Bedford, Massachusetts, USA, is the developer, manufacturer, and marketer of the PowerMod™ line of solid-state power supplies, pulse modulators, power converters and related high voltage, high power equipment. Founded in 1987, DTI develops advanced technologies for defense and industrial applications. DTI's capabilities include power electronics, electromagnetics, RF design, and system integration within applications such as high-energy physics, radar, power conversion, food sterilization and biomass oil extraction.

divtecs.com

Jema Irizar Group

Booth C3

Jema is a leading technology company that is writing the future of energy innovation. For more than six decades, we've been on the cutting edge because of our innovation in designing and manufacturing personalised power conversions systems. Every day, we promote efficiency, top performance, reliability and productivity in public services, industry, transport and infrastructures around the world. With a legacy that surpasses 65 years, Jema is present in more than 90 countries. More than 60% of staff at Jema works in research and developing new products.

We work with the experience and conviction that technological knowledge ensures the best solutions. Consequently, since 1953 our team of experts, who have the talent and knowledge required, have been available for providing personalised solutions that are adapted to your needs.

With our more than 400 facilities around the world, Jema is one of the top providers of energy conversion systems and solutions throughout Europe, the United States, Japan, Mexico, Brazil, UAE, Oman and Russia and others.

Jema is part of the Irizar Group, which is a leading business group in the bus and coach sector and a benchmark in the sectors of electronics, communications (ITS solutions) and rotating machinery.

jemaenergy.com

Sponsors

Booth D3

We specialise in the design, manufacture and supply of innovative market-leading HV and UHV motion and heating products.

Our primary focus is to provide high-quality, low-maintenance manipulation solutions for vacuum applications. Excellence is assured through in-house control of the entire process from design, to manufacture, assembly, test and after sales support. A customer-orientated approach combined with a desire to achieve unrivalled product excellence is key to our continued success.

uhvdesign.com

Booth E3

Microwave Amps is a UK SME with over 30 years' experience in Solid State Power Amplifier design and manufacture. We have been a pioneer of Solid-State Amplifier technology in the High Energy Physics market place, supplying our first S-Band Klystron Driver amplifiers in the early 2000s. Our portfolio now covers the main UHF, L, S, C, and X-Band frequencies, up to multi kW power levels, amplifying both CW and Pulsed signals.

All our amplifiers are designed and built in our UK factory in Bristol, using the latest in transistor technology to achieve customer requirements, and we have been at the forefront of improving Signal Phase and Amplitude Jitter in Low Level RF drive systems.

If you have any RF or Microwave Amplifier requirements, please contact us at sales@maltd.com, or visit our website.

microwaveamps.co.uk

Sponsors

saes

Booth F3

saesgroup.com

bergoz INSTRUMENTATION

Booth H3

Bergoz Instrumentation is a French SME, focusing on non-destructive beam instrumentation for particle accelerators. We have more than 40 years of experience in this field.

We design, develop, and manufacture high-precision current transformers and analog electronics adapted for all kind of particle accelerators.

Our non-intercepting measurement systems allow a characterization of low current particle beams without disturbing beam quality.

bergoz.com

UNIVERSITY OF LIVERPOOL

Booth I3

The University of Liverpool's QUASAR group is a leader in accelerator science research, management and training, carrying out world-class investigations in beam dynamics, beam diagnostics, novel accelerators, and innovative applications. D-Beam Ltd is a spinout company from the QUASAR Group which provides optical diagnostics for enhanced characterization of charged particle beams in accelerators, light sources and reactors. D-Beam covers the design, manufacture, installation and operation of advanced diagnostics for beam characterisation, loss detection and radiation protection applications in storage rings, linear accelerators, and experimental zones. The QUASAR group is home to the Project TEAM, which specialises in the management of large scientific networks, including business development, communication, and training of the next generation of accelerator scientists.

liverpool.ac.uk/physics

Sponsors

Booth I4

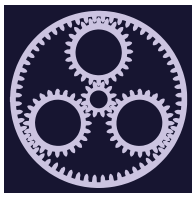
zanonresearch.com

TRUMPF Hüttinger
generating confidence

Booth I5

trumpf-huettinger.com

Sponsors



instruments

an Open Access Journal by MDPI

We aim to publish high-quality scientific papers presenting groundbreaking and innovative results, as well as major achievements in the field of instrumentation and in the use of the related data.

The scope of Instruments includes, but is not limited to: Innovative design, methods, applications, metrological characterization, and theory of all aspects of advanced instruments, including sensors, transducers, signal generators, virtual instruments, and particle accelerators and detectors

Among the main fields: instrumentation in physics, astronomy, chemistry, engineering, electronics, materials science, space science, environment, biology and medicine

New data analysis software and approaches Instrumentation science: uncertainty theory and application, epistemology, measurement production modeling, and experimental identification and validation Advanced instrumentation in medicine: human interface, brain science, space and motion perception, human factors, vision, auditory and somatosensory, attention and performance rehabilitation, sport science.

mdpi.com

theiet.org

Committees

International Organising Committee

Alberto Facco, INFN, Italy
Alessandro Variola, INFN, Italy
Carsten Welsch, University of Liverpool, UK
Dan Berkovits, SOREQ, Isreal
Deepak Raparia, BNL, USA
Dinakar Kanjilal, IUAC, India
E Colby, US-DoE, USA
Enrica Chiadroni, INFN, Italy
Fulvia Pilat, ORNL, USA
Graeme Burt, Lancaster University
Hakan Danared, ESS, Sweden
Hans Weise, DESY, Germany
Heung-Sik Kang, POSTEC, Korea
Hidetomo Oguri, JAEA, Japan
Jean Delayen, ODU, USA
John Barnard, LLNL, USA
John Byrd, ANL, USA
John Seeman, SLAC, USA
Kevin Jones, ESS, Sweden
Marion White, ANL, USA
Masanori Satoh, KEK, Japan
Maurizio Vretenar, CERN, Switzerland
Milorad Popovic, FNAL, USA
Nicolas Pichoff, CEA, France
Pei Guoxi, IHEP, China
Peter McIntosh, IOC Chair, UK
Peter Ostroumov, MSU, USA
Robert Garnett, LANL, USA
Robert Laxdal, TRIUMF, Canada
Shigeru Kashiwagi, Tohoku U, Japan
Stan Schriber, (By-laws Host) MSU (Retired), USA
T Raubenheimer, SLAC, USA
Terry Garvey, PSI, Switzerland
Ulrich Ratzinger, Goethe Universität Frankfurt, Germany
Winfried Barth, GSI, Germany
Yoshishige Yamazaki, MSU, USA

Local Organising Committee

Alexandra Welsch, University of Liverpool
Andrew Collins, STFC UKRI
Ayesha Kamarudin, University of Liverpool
Carsten P Welsch, University of Liverpool
Graeme Burt, Lancaster University
Ian Scarratt, STFC UKRI
Jim Clarke, STFC UKRI
Julie Bradley, STFC UKRI
Liz Kennedy, STFC UKRI
Naomi Smith, University of Liverpool
Neil Batley, STFC UKRI
Peter McIntosh, STFC UKRI
Peter Ratoff, Lancaster University
Peter Williams, STFC UKRI
Philip Burrows, University of Oxford
Rob Apsimon, Lancaster University
Shrikant Pattalwar, STFC UKRI
Stephen Gibson, Royal Holloway University of London
Tessa Charles, University of Liverpool

Scientific Programme Committee

Alberto Facco, Istituto Nazionale di Fisica Nucleare
Alexander Aleksandrov, Oak Ridge National Laboratory
Alwin Schempp, Goethe Universität Frankfurt
Anthony Gonsalves, Lawrence Berkeley National Laboratory
Catherine Madec, Commissariat à l'Energie Atomique
Chuanxiang Tang, Tsinghua University in Beijing
Dan Faircloth, Rutherford Appleton Laboratory
Deepak Raparia, Brookhaven National Laboratory
Dong Wang, Shanghai Institute of Applied Physics
Dong-O Jeon, Institute for Basic Science
Edda Gschwendtner, European Organization for Nuclear Research
Enrica Chiadroni, Istituto Nazionale di Fisica Nucleare
Frank Gerigk, European Organization for Nuclear Research
Geoffrey Krafft, Thomas Jefferson National Accelerator Facility
Graeme Burt, Cockcroft Institute
Hans Weise, Deutsches Elektronen-Synchrotron
Hiroyasu Ego, Institute of Modern Physics, CAS
Jean Delayen, Old Dominion University
John Byrd, Argonne
Kinsho Michikazu, JPARC
Kip Bishofberger, Los Alamos National Laboratory
Kip Bishofberger, Los Alamos National Laboratory
Lars Groening, GSI Helmholtzzentrum für Schwerionenforschung GmbH
Leo Weissman, Soreq Nuclear Research Center
Marion White, Argonne
Matthias Liepe, Cornell University (CLASSE)
Nikolay Solyak, Fermi National Accelerator Laboratory
Osamu Kamigaito, High Energy Accelerator Research Organization
Paolo Craievich, Paul Scherrer Institut
Paolo Pierini, European Spallation Source
Peter Ostroumov, Michigan State University
Purushottam Srivastava, RRCAT
Robert Laxdal, TRIUMF
Robin Ferdinand, Grand Accélérateur Nat. d'Ions Lourds
Sami Tantawi, SLAC National Accelerator Laboratory
Sandra Biedron, University New Mexico
Sang-Ho Kim, Oak Ridge National Laboratory
Shigeru Kashiwagi, Tohoku Univ.
Shinian Fu, Institute of High Energy Physics
Stefan Choroba, Deutsches Elektronen-Synchrotron
Tor Raubenheimer, SLAC National Accelerator Laboratory
Vyacheslav Yakovlev, Fermi National Accelerator Laboratory
Walid Kaabi, Laboratoire de l'Accélérateur Linéaire
Yong-Sub Cho, Korea Atomic Energy Research Institute
Yoshishige Yamazaki, Michigan State University
Yuan He, Institute of Modern Physics, CAS
Yuanrong Lu, Peking University
Yuji Otake, Spring-8

Local Attractions

World Museum
William Brown St, Liverpool L3 8EN
From the sea to the stars, a visit to World Museum reveals millions of years of the earth's historythrough thousands of exhibits and hands on activities.

Liverpool Football Club
Anfield, Liverpool L4 0TH
Meet an LFC legend; indulge yourself in one of the award-winning experience days of LFC Stadium Tour

Walker Art Gallery
William Brown St, Liverpool L3 8EL
The Walker Art Gallery holds a stunning collection of painting, sculpture and decorative arts spanning over six hundred years.

The Royal Albert Dock
3-4 The Colonnades, Liverpool L3 4AA
Located on Liverpool's incredible World heritage Site waterfront, the Royal Albert Dock structure features the largest collection of Grade 1 listed buildings in the whole country.

The Beatles Story
Britannia Vaults, Royal Albert Dock, Liverpool L3 4AD
The award winning 'The Beatles Story' is the world's largest permanent exhibition purely devoted to telling the story of the Beatles' rise to fame, located in the bands hometown of Liverpool.

British Music Experience
Cunard Building, Liverpool L3 1DS
The British Music Experience tells the story of British Music through costumes, instruments,
performance and memorabilia.

Tate Liverpool
Royal Albert Dock, Liverpool L3 4BB
Bringing together artworks from all over the world, Tate Liverpool prides itself on staging an everevolving programme of unique and incredible collections.

Liverpool Cathederal
St James Mt, Liverpool L1 7AZ
Liverpool Anglican Cathedral is Britain's biggest Cathedral and the 5th largest in Europe. Travel to the top of the tower on the 'Tower Experience' and enjoy unrivalled panoramic views from 500ft above sea level! Here visitors can see the city and way beyond, it's also one of the best places to catch a Mersey sunset.
Mersey Ferries

Pier Head, George Parade, Liverpool L3 1DP
San Francisco has its cable cars, New York has its yellow cabs and Liverpool has its famous Mersey Ferries. See the best views of the Liverpool Waterfront on the world famous Mersey Ferry with our 50-minute River Explorer Cruise.

Museum of Liverpool
Pier Head, Liverpool L3 1DG
The Museum of Liverpool is the world's first national museum devoted to the history of a regional city and the largest newly-built national museum in Britain for more than a century.
In 2018, it marked 10 years on Liverpool's UNESCO World Heritage Site waterfront and 10 years of representing Liverpool's unique and interesting history. Enjoy accessible and engaging exhibits showcasing Liverpool's popular culture, hop on board the overhead railway and discover social,historical and contemporary issues associated with the city region.

Liverpool Beatles Museum
23 Mathew St, Liverpool L2 6RE
At the Liverpool Beatles Museum visitors are given exclusive access to this previously unseen
collection of rare memorabilia spanning from the band's inception to Beatlemania and beyond.

Items on display include, George Harrisons Futurama guitar (used on their first shows and recording sessions), Beatles drum kits, the earliest ever colour footage of the Beatles performing, personal letters, the original police log documenting the security arrangements for the Ed Sullivan Show, original seats from Shea Stadium, props from Help, Hard Day's Night and Yellow Submarine and so much
more never before seen memorabilia.

LINAC2022
LIVERPOOL

The Cockcroft Institute
and Science and Technology Facilities Council

Daresbury Laboratory
Sci-Tech Daresbury
Daresbury
WA4 4AD, UK

John Adams Institute for Accelerator Science

Oxford
Denys Wilkinson Building
Keble Road
Oxford OX1 3RH, UK

Imperial
Imperial College London
South Kensington Campus
London SW7 2AZ, UK

RHUL
Royal Holloway University of London
Egham Hill
Egham
Surrey TW20 0EX, UK

The Cockcroft Institute
of Accelerator Science and Technology

UKRI Science and Technology Facilities Council

JAI John Adams Institute for Accelerator Science