

# **Annual Report to Members 2021**

## **Foreword**

The past year has continued the theme of change. After 19 years Executive Director, David Youdan retired in the summer. David's contribution to the IMA has been immense and has been recognised by the creation of the annual David Youdan Medal for service to the IMA. Alan Peacock took over as interim Executive Director and saw the Institute safely through the remainder of the year, and we have now welcomed Rosalind Azouzi as the new Executive Director.

Under David and Alan's stewardship the IMA financial position has remained robust over the past year. Thanks are also due to the Honorary Treasurer, Andrew Osbaldestin, and his team, and to the quality and management of our journals. We continued to provide support to the next generation of mathematicians through our MathsCareers website and were appointed once again to lead the Maths Teaching Scholarships programme by the Department of Education. There have been some savings due to reduced travel during the pandemic, and the staff have operated remotely for most of the year. Conferences were delivered online and digital platforms helped us to keep members connected through 'Virtual Teas'. One of the challenges of the next year is to exploit the positives of online participation, particularly around diversity and inclusion, whilst enabling the closer interactions and networking that in-person attendance facilitates.

Under the Immediate Past President Professor Nira Chamberlain's leadership the IMA has engaged strategically with the broader mathematical sciences community, notably on discussions about the creation of an Academy, and held a fantastic event in Parliament focussing on the impact of mathematical sciences through data analysis and pandemic decision making. For the second year, the Black Heroes of Mathematics conference was an inspiration, making a significant contribution to the conversation on diversity, inclusion and representation in mathematics and science. This meeting will be a lasting legacy of Nira's term as President.

Thank you to all the staff and members who have contributed to the success of this year. It provides the platform for us to continue to make a difference for our members and to the mathematical sciences in the coming years.

Paul Glendinning FRSE FIMA  
President

## **INTRODUCTION**

The COVID-19 pandemic continued to dominate IMA activity in 2021, with staff continuing to work mainly from home and nearly all activities taking place online. As in 2020, most services were maintained and operations ran smoothly, and the Trustees remain very appreciative of the staff's hard work and flexibility.

A significant event this year for the IMA was David Youdan's retirement from the role of Executive Director (ED) in July, a position he had held for 19 years. Alan Peacock (Assistant Director) was appointed as Interim Executive Director until the end of the year while the Trustees worked on recruiting a new ED. We are very pleased to welcome Rosalind Azouzi who took up the position of ED on 4 January 2022.

We ran the Department for Education Mathematics Teacher Training Scholarships scheme for a ninth successful year, recommending 260 outstanding applicants for scholarship funds.

Following the rapid expansion into virtual conferences and events in 2020, the Conference Team focussed this year on embedding and assessing the effectiveness of online delivery, with the primary aims of meeting the needs of delegates and improving accessibility. The team also trialled a hybrid event in September at the INI in Cambridge.

Our Membership numbers have remained stable: we welcomed over 800 new members during the year and awarded over 100 Graduate Prize Memberships.

Once again, we played the leading role with the CMS in the inclusion of mathematics within STEM for Britain at Parliament. The final of the 2021 competition took place online on Monday 8 March, during British Science Week. This year we were able to invite the winners to an in-person Awards Ceremony and Reception, which took place on 6 December at Portcullis House, Houses of Parliament.

In November, for the first time in two years, Council had an in-person meeting at the Royal Society, which was followed by dinner at the Cavendish Hotel. There, we took the opportunity to present a prize to the winner of the inaugural IMA Hedy Lamarr Prize for Knowledge Exchange in Mathematics and its

Applications, and to present IMA's former longstanding Honorary Treasurer, Neil Challis, with his Honorary Fellowship Award. This was Nira Chamberlain's last meeting as President of the IMA, and he reflected on his presidency during which he established the hugely successful Black Heroes of Mathematics annual conference; and became the first President to deliver his Presidential address online.

We were very pleased that David Youdan was able to attend the dinner, and he shared some memories and notable events of his 19 years at the helm of IMA. In recognition of David's outstanding service, Council has established the David Youdan Medal, for services to the IMA.

We hope that you enjoy reading about many more of our activities in 2021 in the rest of this report.

## **IMA AND GOVERNMENT**

Both in its own right and as a member of CMS the IMA has been involved with a wide range of engagement activities in Parliament this year.

We continued to run the DfE Mathematics Teacher Training Scholarships scheme.

IMA Council members are in regular contact with DfE and UKRI.

As mentioned above, in March a panel of CMS judges selected the Parliamentary and Scientific Committee STEM for Britain mathematics winners. We are very grateful to the Clay Mathematics Institute and the Heilbronn Institute for their generous sponsorship of these prizes. STEM for Britain is the largest science event held in the Houses of Parliament on an annual basis and helps to strengthen our dialogue with Parliamentarians.

On 13 September, the Parliamentary and Scientific Committee held an IMA-sponsored meeting on Algorithms and Mathematical Modelling. Led by David Youdan and Dr Martine Barons, IMA Vice President Learned Society, the IMA assembled the following team of speakers: Dr Ellen Brooks-Pollock, Dr Nira Chamberlain (IMA President), Professor Hannah Fry and Dr Christian (Kit) Yates who each gave a 10-minute talk, followed by questions from the online audience. 220 people registered to attend this

event.

## **SERVICES TO MATHEMATICS**

### **Research Committee**

Dr Martine Barons, Vice President Learned Society, chaired the Research Committee in 2021. The full membership of the Committee can be viewed on the IMA website:

<https://ima.org.uk/roles/research-committee/>

These researchers contribute to our discussions with the research funding councils and policy makers, and work to promote the benefits of fundamental and applied mathematical research to the economy and to society. The Research Committee also assess applications for Small Grants.

In addition to the three Committee meetings, Research Committee worked throughout the year, on behalf of the community in many ways, including the following:

- The Committee continued to consider the output of the BMI and the proposed creation of the ‘Connected Centres Knowledge Exchange Network’ and ‘Academy for the Mathematical Sciences’. In July several members of the Committee attended a meeting hosted by the IMA Professional Affairs Committee (PAC) at which invited guests, Joanna Jordan and Matt Butchers gave insight into how such initiatives might work. Further details on this topic are included in the update on PAC.
- As usual, the Committee worked to support the community in many ways, including by liaison with external bodies. For example, Committee members encouraged others in the community to stand for nomination to the EPSRC Mathematical Sciences Strategic Advisory Team, and an IMA representative attended a learned society workshop which was held as part of the EPSRC review of Doctoral Education.
- Nominations for the inaugural award of the ‘IMA Hedy Lamarr Prize for Knowledge Exchange in Mathematics and its

Applications’, which had been introduced to the community in 2020, closed on 31 January 2021. The first award was made to Professor Rebecca Hoyle for her sustained contributions to knowledge exchange in the mathematical sciences, creating new links between academia and the wider world, and inspiring, enhancing and supporting others in their knowledge exchange.

- Dr Martine Barons worked with IMA and LMS colleagues to organise the 2021 joint IMA-LMS scientific meeting, which took place on 30 September and 1 October, on the theme of ‘Maths in Human Society’. This meeting, which was held virtually, included a number of mathematical lectures, as well as artistic exhibitions; a range of topics including pure and applied geometry, network science, and urban systems featured on the programme. Thanks are given to ICMS for hosting the event as part of its online Mathematical Sciences Seminars and to all involved from both societies, speakers, other participants and attendees.

### **Journals**

The Institute’s eight academic journals are published by Oxford University Press (OUP). Three of these are traditional hybrid print journals:

- *IMA Journal of Applied Mathematics*  
Editors: Alan Champneys (Bristol), and Demetrios Papageorgiou (Imperial);
- *IMA Journal of Numerical Analysis*  
Editors: Arie Iserles (Cambridge), Endre Süli (Oxford) and Charles Elliot (Warwick);
- *Teaching Mathematics and its Applications: an International Journal of the IMA*  
Editors: Duncan Lawson (Coventry), Christopher Sangwin (Edinburgh) and Cathy Smith (OU).

Four are online only hybrid journals:

- *IMA Journal of Mathematical Control and Information*

Editors: Christophe Prieur (Grenoble), Sarah Spurgeon OBE (UCL) and Joachim Rudolph (Saarland University);

- *Mathematical Medicine and Biology: A Journal of the IMA*  
Editors: Oliver Jensen, (Manchester), John King (Nottingham), James Keener (Utah) and Bob Guy (University of California Davis);
- *Information and Inference: A Journal of the IMA*  
Editors: Robert Calderbank, (Duke); David Donoho, (Stanford); John Shawe-Taylor, (UCL) and Jared Tanner, (Oxford);
- *IMA Journal of Management Mathematics*  
Editors: Philip Scarf (Salford); and Aris Syntetos (Cardiff).

One is an open access only online journal:

- *Transactions of Mathematics and its Applications*  
Editor in Chief: Arieh Iserles (Cambridge) and Dominic Vella (Oxford);

Five journals currently have impact factors (IF). During the most recent assessment period the IF increased for *IMA Journal of Numerical Analysis* to 2.601.

## Conferences

The IMA Conferences Committee met in January 2021 when it reviewed the position regarding the possibility of in-person conferences resuming in 2021. The committee agreed that we should continue to convert in-person events to online events for the next six months.

The Conferences Committee met again in June 2021, and reviewed the progress made in delivering online events. The committee agreed that the combination of Zoom and additional networking software was working well and that this should be continued for the rest of 2021.

Following the success of the IMA 2020 Mathematics Series in July/August we ran a similar online series in May this year. The IMA 2020 Gold Medal winner, Professor Nick Higham delivered his Gold Medal

Lecture as the inaugural event of the 2021 Mathematics series.

The programme for 2021 was as follows:

- *Python for A-Level Mathematics and Beyond – online*  
22 & 23 January 2021
- *Early Career Mathematicians Spring Conference - online*  
13 March 2021
- *6th IMA Conference on Mathematics in Defence – online*  
30 & 31 March 2021
- *3rd Mathematics of Operational Research – online (with the OR Society)*  
20-23 April 2021
- *IMA Mathematics 2021 – online*  
6 May & 25 May 2021
- *11th IMA International Conference on Modelling in Industrial Maintenance and Reliability (MIMAR) – online*  
28 June-2 July 2021
- *4th IMA Conference on Nonlinearity and Coherent Structures – online*  
7-9 July 2021
- *Python for A-Level Mathematics and Beyond – Summer – online*  
16 & 17 July 2021
- *3rd New Lecturers' Induction Course – hybrid (at the INI)*  
8 & 9 September 2021
- *2nd IMA Conference on the Mathematics of Robotics – online*  
8-10 September 2021
- *Maths in Human Society - Joint conference with LMS – online*  
30 September & 1 October 2021
- *Black Heroes of Mathematics Conference –*

online (with BSHM, ICMS, LMS, INI, ICTP-East African Institute for Fundamental Research, African Institute for Mathematical Sciences and the Mathematical Association)  
5 & 6 October 2021

- *Early Career Mathematicians Autumn Conference – online*  
23 October 2021
- *18th IMA International Conference on Cryptography and Coding – online*  
14-16 December 2021

The feedback from delegates has been very positive, and we have noted that going online has resulted in an upward trend in female participation, more international delegates, and an overall accessibility of the conferences.

We give our thanks to the mathematical organising committees, and the conference team for working so diligently to ensure effective and engaging online delivery in 2021. We anticipate a mix of online and in-person events in 2022.

### **IMA Lectures**

As reported within the Conferences events section, Professor Nick Higham gave the 2020 Gold Medal Lecture, *Communicating Applied Mathematics in 2021*, online.

Two 16plus lecture events are also reported within the Conferences events section.

### **Small Grants**

The IMA's Small Grants Scheme is designed to be flexible, so that it can be used to facilitate any research activity within the scope of mathematics and its applications. Grants are available up to a value of £600 for individuals and up to £1,200 when enabling an event to take place. Applications are limited to IMA members only.

The budget for 2020 was £12,000. Events continued to be affected by affected by Covid-19 so application numbers were reduced. The Scheme received 10 applications, requesting a total amount of £5,550, however, two were withdrawn. The remaining eight

were awarded in full. Awards for 2021 are shown on the IMA website.

### **Education**

During 2021, our contribution to mathematics education was led by Professor Michael Grove (Honorary Secretary with responsibility for Education), supported by Professor Nigel Steele (Deputy Honorary Secretary Education), Professor Andrew Osbaldestin (Chair, HEdSA), Mr Christopher (Chris) Chipperton (Chair, S&FE), Dr Gordon Laing (Chair, S&FE) and Vanessa Thorogood (Education Manager) together with all our education committee members.

The Education Service Area actively promotes the engagement of the Institute's members in education with its work through communications by email, on the website, and in *Mathematics Today*. For instance:

- notification of the publication of key reports;
- invitations to participate in events and / or contribute to external initiatives;
- opportunity to provide feedback on specific issues;
- invitations to contribute to Institute responses to consultations;
- publication of the Institute's submissions to consultation exercises.

### **Higher Education**

During 2021, HEdSA updated the IMA Employability Statement.

Dr Tony Hill was invited to the meeting to present to HEdSA about his initiative Levelling up: Maths, which aims to support the provision of online tutoring for A-Level Mathematics students who come from underrepresented backgrounds in mathematics. To achieve this, undergraduate student tutors are brought together with A-Level Mathematics students who wish to study a STEM degree at university. The project works with universities who help to identify local schools with students who the project is aimed at, and recruit undergraduate students.

As a result, a Working Group was established to take

forward the IMA's involvement with the Scheme and the IMA had engaged with four new universities to join the programme during Autumn 2021.

### **HE Teaching and Learning Series**

The continuation of the COVID-19 pandemic resulted in the already postponed workshops from 2020 being postponed further.

We have agreed with the successful applicants to our third call in 2019/20 that their workshops can be held in 2022 (subject to government advice on COVID-19):

- University of Birmingham – *Making Mathematics Accessible to All*
- Cardiff University & University of Bristol – *Reflection? Action? Research: Enhancing Mathematical Research and Scholarship*
- University of Glasgow – *Assessment strategies for mathematical sciences in the digital era*
- University of Nottingham - *Project-based and synoptic modules*
- University of Plymouth – *Involving employers in the development of the mathematical sciences curriculum*
- University of Sheffield – *Effectively teaching small classes as a postgraduate demonstrator*

The Teaching and Learning Mathematics Online initiative, led by Michael Grove (Birmingham), Rachel Hilliam (Open University) and Kevin Houston (Leeds), and endorsed by the IMA, RSS and LMS, which was developed in response to the Covid-19 pandemic to assist colleagues within the mathematical sciences adapt their teaching for online delivery, has continued to offer a programme of online activities and events. In addition to curating a comprehensive series of teaching and learning-related resources, regular online events and activities have taken place to provide support and networking opportunities for those working in higher education. A full list of events can be found on the TALMO website (<http://talmo.uk/index.html>), however a recent shift

has seen a move away from pandemic-related support towards a longer-term future for TALMO as an online network to support teaching and learning more broadly within the mathematical sciences in higher education.

### **Induction Course for New Lecturers**

The Induction Course for New Lecturers took place on Wednesday 8 and Thursday 9 September 2021 as a hybrid event.

### **IMA John Blake University Teaching Medal**

The IMA John Blake University Teaching Medal is awarded to individuals who have made a significant and sustained contribution to the teaching of the mathematical sciences at university-level (Level 4 and above). The award is named in honour of Professor John Blake (1947-2016) who, in addition to his research profile in bubble dynamics and low Reynolds number biological flows, was amongst the first true champions of teaching and learning within higher education.

In 2021, the Council of the IMA has awarded the first IMA John Blake University Teaching Medal to Dr Lara Alcock (Reader in mathematics education at Loughborough University).

### **Course Accreditation**

The Institute's Course Accreditation scheme accredits university degree courses from which all its graduates will meet the educational requirements for the CMATH designation. A total of 64 universities currently have degrees accredited by the Institute.

During 2021, revised guidelines for Course Accreditation were published and have been fully implemented.

A list of accredited degree courses can be found on the Course Accreditation page of the Institute's website.

In February, the IMA was contacted by Dr Chris Tisdell (Professor of Mathematics and Mathematics Education (UNSW)) in his capacity as Vice-President of the Australian Mathematical Society (Education).

Dr Tisdell has been given the task of looking into setting up an accreditation scheme for mathematics

degrees in Australia and wanted to see what he can learn from the IMA's Course Accreditation scheme.

An online meeting took place, after which, a copy of the Course Accreditation guidelines and associated paperwork was shared with Dr Tisdell, with the proviso that the IMA's assistance is acknowledged if a similar scheme is introduced by the AMS.

### **Schools and Further Education**

Mr Chris Chipperton's second three-year term as Chair of the S&FE Committee ended in 2021. He was succeeded by Dr Gordon Laing. The Committee responded to the following consultations:

- RS ACME Mathematical Futures Call for Views (joint response with HEdSA)
- DfE – Introducing international qualified teacher status (iQTS)
- Ofqual and the DfE Joint Consultation – How GCSE, AS and A level grades should be awarded in summer 2021
- Pearson – National Consultation into the Future of Qualifications and Assessment in the UK
- DfE & Ofqual Consultation: Proposed changes to the assessment of GCSEs, AS and A levels in 2022
- DfE & Ofqual Consultation: Contingency arrangements: GCSE, AS, A level, Project and AEA

### **Polymaths**

Polymaths is a part-time open access course validated by the Institute offered by the University of Bolton. A total of five people were awarded the Polymaths certificate in 2021.

### **Education Grants**

Individuals in schools, FE and HEIs in the UK can apply for a grant, normally up to a maximum of £600, to help with the costs of running or attending an educational activity relating to mathematics.

The Education Grants Judging Panel, consisting of the

Institute's Honorary Secretary with Responsibility for Education and the Chairs of the education committees, decides on each application.

During 2021, the Education Grants scheme received 17 applications; of which three were awarded grants for the full amount requested, one received a reduced grant and 13 were declined.

The Education Grants awarded a total of £1,801.34 in 2021.

Applications approved for 2021 are shown on the Institute's website.

### **IMA MathsCareers**

During 2021 MathsCareers received 399,939 visits. The site is one of the top websites of its kind within the STEM community and continues to be popular among undergraduates seeking career advice as well as school audiences. Content planned for 2022 includes an increased range of articles on GCSE maths topics, as well as articles on a variety of mathematical careers. Two contests are run every year where entrants submit posters on a mathematical theme.

Social Media is used to raise the profile of IMA MathsCareers, and it now has 7,537 followers on Twitter including several 'verified' followers. The profile of the site, as well as mathematics generally, is raised via the distribution of classroom posters.

### **Mathematics Teacher Training Scholarships**

The IMA, working with LMS, MA, MEI, STEM Learning and RSS, delivered the Mathematics Teacher Training Scholarships on behalf of the Department for Education. The overall aim of the Scholarships scheme is to improve the quality, and widen the pool, of applicants for secondary teacher training by attracting highly qualified graduates and career-changers who might not normally consider teaching as a career.

The 2020/21 (year nine) scheme was announced in October 2020 and opened for applications in January 2021, with a target of awarding 270 Scholarships to those who commence secondary mathematics teacher training in the 2021/22 academic year. We had another



successful year, receiving 520 applications and awarding 260 Scholarships. It is important to note that whilst the number of Maths Scholarships is less than the previous year, the number of awards was capped at 270.

Whilst all our activities remained online during 2020/21, in comparison to previous cohorts of Maths Scholars, we continued to provide the same quality and quantity of CPD for our Maths Scholars. The webinars that our Maths Scholars received were:

- NRICH – Dr Ems Lord (Director of NRICH)
- Operational Research - Let's play with Lego – Robin Wood (The OR Society)
- Using Desmos for Statistics – Natalie Vernon (MEI)
- Finding the Richness – Alison Kiddle (Consulting Mathematician)
- Maths Engagement in and Beyond the Classroom – Jess Sashaw and Beth Hawkins (Science Museum Group Academy)
- Mathemagic! – Steve Lyon and Michael Anderson (STEM Learning)
- Teaching for Mastery and Visual Learning – Simon Mazumder (NW1 Maths Hub)
- What's the point? Bringing the real world into maths lessons with STEM Ambassadors – Tamasin Greenough Graham (North Yorkshire STEM Ambassador Hub)
- Lost in transition? How to support students as they move from KS2 to KS3 – Alison Hopper (MEI)
- Financial Maths – how to make the finance of maths come to life for students – Bobby Seagull (Maths Teacher and Alumni)

Other than the first two webinars, our Alumni were also invited to attend the webinars.

In July we held our final CPD event, the Online Summer Bash 2021, which was hosted by Dr Nira Chamberlain.

To address the lack of networking opportunities that comes with online CPD, The Common Room was established to provide an informal space where Scholars and Alumni can mingle and share resources in a relaxed but purposeful way. There were five Common Rooms held in total.

The tenth year (2021/22) of the Mathematics Teacher Training Scholarships was announced in October 2021 and applications will open in January 2022. There is no change to the financial incentives for those going into mathematics initial teacher training for both the government bursary and the Scholarships. The Maths Scholarship is still a £26k tax-free bursary during the initial teacher training year.

Again, there are 270 Maths Scholarships available for individuals commencing secondary mathematics teacher training in the 2022/23 academic year.

### ***University Liaison***

The University Liaison activity increases membership, awareness of, and participation with the IMA amongst undergraduate and postgraduate students, and the university community. This is achieved through newsletters to our nearly 6,800 strong eStudent community, grants to postgraduate and undergraduate student mathematical societies, careers talks for mathematics undergraduates and supporting careers events and student conferences. In 2021 there were five issues of the eStudent newsletter. From October 2021 in-person talks resumed though some remained online. The Tomorrow's Mathematicians Today conference was hosted online in March by University of Greenwich, with over 120 delegates registered across the two days and 18 student presentations.

In 2021, £4,000 was paid in grants. Undergraduate awards were made to the Mathematical societies of the Universities of Aberdeen, Cardiff, Dundee, Newcastle, University College London, and Warwick. Awards were made to the IMA-SIAM Joint Student Chapters of the universities of Cardiff, Dublin, Edinburgh/Heriot-Watt, Sheffield and Warwick. Sponsorship of £850 was also given for prizes for the Oxford Industrially Focused Mathematical Modelling (InFoMM) Graduate Camp and speaker costs at the SIAM UKIE annual conference. Society activities supported included conferences, competitions, talks and participation in IMA conferences. The University

Liaison Officer (ULO) delivered 28 careers talks, 15 of which were delivered remotely, and supported two careers panels, eight conferences and the InFoMM camp. Two events were delivered by IMA ambassadors.

In September, Council agreed that the IMA would support the Levelling Up Mathematics project piloted in 2020 by the LMS with the Universities of Durham and Leicester. The University Liaison Officer is coordinating this activity with our partner universities.

### ***Academic Representatives***

The Academic Representatives scheme was established by the Institute in 2017, and we currently have 60 Representatives at 58 universities. Representatives are members of academic staff and they support the Institute by highlighting the work of the IMA in the community and beyond, to their students and colleagues, as well as providing feedback on the priorities of academic members. During 2021 two AR Newsletters were sent to help to grow the full membership of students and academics. It is planned that the scheme will develop further over the next year.

### ***Early Career Mathematicians' Group***

The Early Career Mathematicians' (ECM) Group aims to provide those starting out in the profession with opportunities to develop their skills and network with peers. Two ECM conferences took place online in March and October. Both conferences were well-attended and offered early-career members a varied programme of engaging talks and dedicated time to network with other attendees. These conferences were organised with assistance from the Secretariat.

The Group also organised a popular Virtual Maths Tea session on the topic of working as a mathematician in industry. The ECM Group continues to work closely with the University Liaison project to recruit student members and is also active on social networking sites.

### ***Professional Affairs***

The Professional Affairs Committee (PAC) met three times during 2021 via remote conference facilities, chaired by Dr Richard Pinch. The Key agenda items were advancing a Knowledge Exchange (KE) strategy within the IMA, and engagement with the Data

Science Professionalisation steering group, which had emerged in 2020 following an initiative by the Royal Society, and comprising a number of professional bodies led by the RSS.

At the meeting in July, the committee was joined by members of the IMA's Research Committee to discuss KE. The Chair noted that both Executive Board and Council had agreed recently that PAC should take the lead on KE for the IMA to ensure that the non-academic side of KE is properly represented. He welcomed guests, Joanna Jordan and Matt Butchers, who provided an overview of the Connected Centres proposition, and described how they saw the project developing, how the IMA could contribute to the project, and specifically how the IMA could deploy the connection with members in supporting this.

The Employers' Forum did not take place this year due to the ongoing COVID-19 situation. It had been considered whether a specific KE Employers Forum would be desirable in future, and following the earlier discussion it was agreed that the aim would be to hold an Employers' Forum in person in 2022, possibly with some online component, on the theme of KE, aiming to support some aspect of the proposed Academy of Mathematical Sciences and Connected Centres work programs.

The committee noted that the Data Science Professionalisation steering group had made a proposal regarding new professional designations which would not replace or compete with the chartered or professional designations of any of the existing societies, and which would be awarded in accordance with a jointly agreed set of criteria. This was welcomed as a positive step in improving data skills and enhancing professional standards in Data Science.

Details of our Corporate Affiliate members can be found at:

<https://ima.org.uk/affiliates/corporate-affiliates/>

We are very grateful for the involvement of these organisations with mathematics and with the Institute.

### ***Mathematics Today***

In August we published a Summer Bumper issue and we celebrated Black History Month in the October

issue, which included the Presidential Address from Dr Nira Chamberlain.

The Graham Hoare Prize 2021 was awarded to Robyn Goldsmith for her entertaining article ‘Could Mathematics Be Big at the Box Office?’ which was published in the December 2021 issue.

The Catherine Richards Prize continues to select the best article published each year. The 2021 prize was awarded to Mark Pencovitch for his article, ‘What’s Knot to Love?’, from the August 2021 issue.

### ***IMA Website and Social Media***

The Social Media Task Group was established in 2020 to support the IMA’s Marketing Officer with guidance on making mathematical social media posts; and determine how we could connect with our membership during the pandemic. The role of the group continued and expanded in 2021, chaired by Dr Peter Rowlett, with new members joining to incorporate a more diverse input. We experienced high membership engagement this year during Women’s History Month 2021, Pride Month 2021 and Black History Month 2021. Further information on the work of the group is contained under “Membership Development”.

The IMA’s presence on social media has increased over the year. We have gained over 3,000 followers on Twitter, bringing our total to 20,190. Our LinkedIn company page has over 20,775 followers. Our Facebook page has over 1130 followers and Facebook group has over 4,500 members. Our newest channel, the IMA Instagram page now has over 470 followers.

Google estimates demographic information about its users which it partially shares with us via our Google Analytics account. This demographic information extends to age and gender. Demographic information provided by Google Analytics of the visitors to the IMA website has been informative: in 2021 more than half of the visitors to the IMA site have been under 34 years of age (57.91%); and the gender distribution of total visitors is around 56/44 split of male to female (in comparison to the current total IMA member split of 75/25 male to female).

Sessions to the IMA website are up this year. Each month of 2021 resulted in more site visits than in 2020,

with 1-2k sessions more than the corresponding month in 2020. Visits to the IMA website are up 11 per cent on 2020.

### ***IMA e16plus Newsletter***

The e16plus Newsletter published six editions in 2021. It is designed to inspire and raise interest in mathematics amongst 16 to 19-year olds and has 1,515 subscribers. The regular puzzle feature continues to be popular with readers, and the links in the newsletter are designed to encourage engagement with MathsCareers and the IMA website.

### ***Branches***

Branches continue to be an important feature of the IMA, providing regional networking opportunities. They are run by committees of local members, with administrative support provided by the Secretariat.

The six active branches have held varied programmes of events for their members during 2021 and plans for the 2022 programme of talks are underway. Branches continued to provide an interesting selection of talks online, which enabled members who might usually be unable to attend in-person meetings to engage with their local branch. Many talks were recorded and uploaded to the IMA Youtube channel. The West Midlands branch held the first hybrid online / in-person talk during November.

Some areas of the UK remain unrepresented by branches; members are encouraged to consider establishing new branches (or reviving dormant ones) in these areas, for which Secretariat assistance continues to be a high priority.

### ***Diversity and Inclusion***

The IMA is a signatory of the Science Council Declaration on Diversity, Equality and Inclusion, and Council has appointed champions to lead the IMA in this important agenda. Dr Snezana Lawrence is thanked for her valuable contributions as Diversity Champion during 2021.

By identifying diversity as a cross-cutting theme in all IMA committee meetings many improvements have been identified and achieved. This is reflected in key events and programmes across our portfolio of activities which the IMA has led or partnered over the

course of 2021 including:

- International Women’s Day Maths Tea event in March 2021;
- Support to the LMS Women in Mathematics Committee through IMA representation;
- Conference Organising Committee Members always take gender equality into account when considering invited speakers, and in the formation of the committee;
- Black Heroes of Mathematics Conference October 2021;
- Black History Month articles in *Mathematics Today* in October 2021;
- Continued commitment to increasing engagement from underrepresented groups through the e16plus Newsletter, MathsCareers website and social media activities;
- Becoming a partner with the Levelling Up: Mathematics programme to provide extra Mathematics tuition for disadvantaged A-Level students.

Our second Membership Diversity Survey was carried out during August; and we thank those members who took the time to respond. This, along with the results of the D&I Progression Framework benchmarking exercise, led by the Science Council and Royal Academy of Engineering, will help shape our plans in this area of work for 2022 and beyond.

## **MEMBERSHIP and CHARTERED REGISTERS**

The Membership Committee, chaired by Professor Paul Glaister, is delegated, by Council, to assess individual membership applications. The Membership Committee is made up of Chartered Mathematicians and Scientists who are Fellows of the Institute. They have a background in at least one of the following major areas of employment for mathematicians: academic research and teaching, schools and further education, industry, commerce, finance and IT.

In 2021 we have had the privilege to welcome over 800 new members and assist 104 existing members in transferring to a higher grade. We have also recruited 18 new Chartered Mathematicians and/or Chartered Scientists.

Membership figures at 31 December 2021:

|                  |             |
|------------------|-------------|
| Honorary Fellow  | 16          |
| Fellow           | 1,437       |
| Member           | 1,297       |
| Associate Member | 1,858       |
| Affiliate        | 543         |
| Student          | 537         |
| <b>Total</b>     | <b>5688</b> |

Of the above memberships, 1,483 are registered as Chartered Mathematicians and 213 as Chartered Scientists.

The Institute has continued to support UK University Mathematics Departments by offering over 100 IMA Graduate Prize Memberships in 2021.

### **Chartered Mathematics Teachers**

The Chartered Mathematics Teacher Registration Authority consists of representatives from IMA, Association of Teachers of Mathematics, Mathematical Association, and National Association of Numeracy and Mathematics in Colleges. Professor Paul Glaister, the chair of the Institute’s Membership Committee, also chairs the Chartered Mathematics Teacher Registration Authority. At 31 December 2021, we had 43 registered Chartered Mathematics Teachers.

### **Membership Development**

The onset of the pandemic in 2020 led to a switch in focus to ensuring that we maintained close connection with and provided support to our membership. This remained principal focus during 2021.

The IMA “Virtual Maths Teas” launched in 2020, and proved very successful, enabling members to join informal discussions on a range of topics. This continued in 2021 with a further six successful events. The Virtual Maths Tea on 8 March - “Women in Maths” – was so successful that we decided to run the event again on 12 May for Women in Mathematics

Day. Due to ongoing popularity, these events will continue into 2022.

The Membership eBulletin continues to be issued every two months, alternating with *Mathematics Today*. The last edition of 2021 was issued in November. The eBulletin issued in early May 2021 contained the following message to members:

“It is now over a year since the first lockdown and we are very pleased to report that our membership numbers continue to be healthy. We have strived to maintain IMA services throughout and we would like to thank you, our members, for your stalwart support during this challenging year. It is very much appreciated by IMA Council, committee members and the staff. We look forward to seeing you at our online (and hopefully in-person) events during the coming year.”

## **GOVERNANCE**

Dr Nira Chamberlain, who became IMA President on 1 January 2020, chaired Council as it considered all the issues in this report.

Dr Martine Barons and Professor Paul Glaister joined Council on 1 January 2021 as Vice President Learned Society and Honorary Secretary with responsibility for education, respectively.

In 2021, Councillor nominations exceeded vacancies, so a ballot was held. Council was pleased to welcome the following members: Dr Sophie Carr (elected), Mr Chris Chipperton (re-elected), Dr Francisco de Melo Viríssimo (elected, formerly co-opted), Dr Snezana Lawrence (re-elected) and Professor Graham Niblo (elected, formerly co-opted). Candidates who stood for election to the IMA Council are warmly thanked for their willingness to serve the community.

Additionally, Dr Eduard Campillo Funollet and Professor Sara Lombardo were co-opted to Council in 2021.

Throughout the year Council discussed the response to COVID-19, the actions to maintain activities and the initiatives to increase services where appropriate.

All who sit on Council are the Trustees who approved this report. A full list of Council can be seen at the Governance web page.

## **Executive Board**

The Executive Board involves all Honorary Officers of the Institute together with Professor Nigel Steele, as well as selected staff members from the Secretariat. During 2021, Executive Board invited the Diversity Champion, Dr Snezana Lawrence, to join its meetings.

## **IMA Committees**

Details of leading IMA Committees are shown on the Governance webpages.

## **EXTERNAL RELATIONS**

### **UK Mathematics Organisations**

#### **Council for the Mathematical Sciences (CMS)**

CMS is composed of IMA, LMS, RSS, EdMS, and ORS. Professor Alison Etheridge OBE, FRS, FIMA was appointed as the new chair of the Council for the Mathematical Sciences in June 2021, succeeding Professor Sir Ian Diamond FBA, FRSE, FAcSS, National Statistician.

A number of activities that relate to education and research were advanced together with our sister societies within CMS.

CMS continues to receive briefings from Royal Society ACME, which is funded by the IMA and others.

CMS continued to promote the needs of mathematics to BEIS, DfE, UKRI, the House of Commons Science and Technology Committee, the House of Lords Science and Technology Committee, and the Scottish Funding Council.

CMS engaged actively with the proposed Academy for the Mathematical Sciences: this included inviting members of CMS society bodies to a Town Hall meeting on this topic, scheduled for early 2022, and providing an opportunity to contribute to the debate by responding to a related draft Green Paper.

#### **London Mathematical Society (LMS)**

Throughout 2021 we continued to work with the LMS in many areas including research, Mathematics Initial

Teacher Training Scholarships and mathematics promotion.

Together we also award the David Crighton Medal for Services to Mathematics and the Mathematics Community, and the Christopher Zeeman Medal for Mathematics Promotion. In 2021 Professor Caroline Series was awarded the David Crighton Medal, and events related to both of these joint medals are planned to take place when COVID-19 distancing measures have been relaxed.

As documented in the Research Committee section of this report, a well-attended, fifth scientific meeting of the current IMA-LMS series, titled ‘Maths in Human Society’ took place online, on 30 September and 1 October.

The IMA continues to work closely with the LMS on a number of activities, from jointly recognizing and celebrating mathematical achievement, to supporting the next generation of mathematicians, in order to ensure the best use of available resources and individual strengths of each organisation.

### **Other UK Mathematics Organisations**

We continue to work with the Association of Teachers of Mathematics, the Mathematical Association and NANAMIC in the management of the Chartered Mathematics Teacher Registration Authority.

We also work with many sister organisations, Royal Society ACME, NCETM, and the Joint Mathematical Council to promote and support mathematics whenever possible.

The IMA has a representative who is an invited observer to the HoDoMS meetings and activities. The IMA always seeks to develop its higher education strategy in agreement with HoDoMS and the LMS.

### **UK SET and Others**

#### **Science Council**

The IMA is a member of Science Council and continues to work cooperatively with it to promote science, including mathematics, to Government.

Throughout 2021 the Chartered Scientist designation

has continued to be popular with members with 213 holding the designation.

### **International**

#### **SIAM**

IMA members who live in the UK may receive a discounted SIAM membership fee under our reciprocity agreement. (A reciprocal arrangement exists for SIAM members who live in the US). We have joint promotional campaigns and co-operative activities with SIAM and SIAM UKIE.

#### **EuMS**

The IMA is a member of the EuMS. IMA members pay their discounted subscriptions directly to EuMS.

#### **ICIAM**

The IMA has continued its membership and support of the International Council for Industrial and Applied Mathematics.

A list of members who represented the IMA to STEM organisations in 2021 is presented in Appendix B.

### **SECRETARIAT**

The Institute staffing at 4 /1/ 22 was:  
Executive Director – Rosalind Azouzi;  
Operations Director – Alan Peacock;  
Conference and Administration Assistant – Catherine Marshall;  
Conference Officer – Maya Everson;  
Editorial Officer – Rebecca Waters;  
Education Manager and Project Manager, Scholarships – Vanessa Thorogood;  
Executive Manager – Alison Penry;  
Membership Assistant – Sabeen Hansraj;  
Membership Manager – Caroline Irwin;  
Services Officer – Gemma Reeves;  
Services Officer – Joanna Baldacci;  
Services Officer – Eugene Kidwell;  
University Liaison Officer (part-time) – Erica Tyson;  
Administration Officer (part-time) – Karen Hedderley;  
Administration Assistant (part-time) – Debbie Sullivan;  
Conferences and Administration Officer (part-time) – Pamela Bye;

Marketing Officer (part-time) – Nikki Barnes;  
Membership Officer (part-time) – Natalie Stanton.

## **FINANCE**

The final result was an unrestricted surplus of £83,672, compared with a budget deficit of £23,622. At the end of 2021 the total assets less current liabilities was £1,478,154. In 2020 the equivalent figure was £1,412,247

Funds were used to support our charitable aims. There is a clear public benefit in our activities to support education, run educational conferences, to support mathematics to Government, and to regulate the professions of Chartered Mathematician and Chartered Mathematics Teacher.

Members receive a membership publication: *Mathematics Today*, six times a year. The revenue received from members' subscriptions exceeds the cost of providing membership services. The subscription surplus is spent on meeting our charitable and public benefit objectives.

### **Notes to the Financial Statements for the year ended 31 December 2021**

The accounts given in Appendix A represent an extract from the full formal financial statements, and should be read in conjunction with the 'accompanying notes'.

This Annual Report was approved by the Trustees at the Council meeting of March 2022.

The IMA Trustees

### **INDEPENDENT AUDITORS' REPORT TO THE TRUSTEES OF THE INSTITUTE OF MATHEMATICS AND ITS APPLICATIONS**

#### **OPINION**

We have audited the financial statements of The Institute of Mathematics and its Applications (the 'charity') for the year ended 31 December 2021 which comprise the statement of financial activities, the balance sheet, the statement of cash flows and the notes to the financial statements, including a summary of significant accounting policies. The financial reporting framework that has been applied in their preparation is applicable law and United Kingdom Accounting Standards, including FRS 102 "The Financial Reporting Standard applicable in the UK and Republic of Ireland" (United Kingdom Generally Accepted Accounting Practice). In our opinion the financial statements:

- give a true and fair view of the state of the charity's affairs as at 31 December 2021 and of its incoming resources and application of resources for the year then ended;
- have been properly prepared in accordance with United Kingdom Generally Accepted Accounting Practice; and
- have been prepared in accordance with the requirements of the Charities Act 2011.

#### **BASIS FOR OPINION**

We have been appointed as auditors under section 144 of the Charities Act 2011 and report in accordance with regulations made under section 154 of that Act. We conducted our audit in accordance with International Standards on Auditing (UK) (ISAs (UK)) and applicable law. Our responsibilities under those standards are further described in the Auditor's responsibilities for the audit of the financial statements section of our report. We are independent of the charity in accordance with the ethical requirements that are relevant to our audit of the financial statements in the UK, including the FRC's Ethical Standard, and we have fulfilled our other ethical responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

### **CONCLUSIONS RELATING TO GOING CONCERN**

In auditing the financial statements, we have concluded that the trustees' use of the going concern basis of accounting in the preparation of the financial statements is appropriate.

Based on the work we have performed, we have not identified any material uncertainties relating to events or conditions that, individually or collectively, may cast significant doubt on the charity's ability to continue as a going concern for a period of at least twelve months from when the financial statements are authorised for issue. Our responsibilities and the responsibilities of the trustees with respect to going concern are described in the relevant sections of this report.

#### **OTHER INFORMATION**

The other information comprises the information included in the annual report other than the financial statements and our auditor's report thereon. The trustees are responsible for the other information contained within the annual report. Our opinion on the financial statements does not cover the other information and, except to the extent otherwise explicitly stated in our report, we do not express any form of assurance conclusion thereon. Our responsibility is to read the other information and, in doing so, consider whether the other information is materially inconsistent with the financial statements or our knowledge obtained in the course of the audit, or otherwise appears to be materially misstated. If we identify such material inconsistencies or apparent material misstatements, we are required to determine whether this gives rise to a material misstatement in the financial statements themselves. If, based on the work we have performed, we conclude that there is a material misstatement of this other information, we are required to report that fact.

We have nothing to report in this regard.

### **MATTERS ON WHICH WE ARE REQUIRED TO REPORT BY EXCEPTION**

We have nothing to report in respect of the following matters in relation to which the Charities (Accounts and Reports) Regulations 2008 require us to report to you if, in our opinion:



## Appendix A

- the information given in the financial statements is inconsistent in any material respect with the Trustees Annual Report; or
- sufficient accounting records have not been kept; or
- the financial statements are not in agreement with the accounting records; or
- we have not received all the information and explanations we require for our audit.

### **RESPONSIBILITIES OF TRUSTEES**

As explained more fully in the Statement of Trustees' responsibilities in the preparation of financial statement, the trustees, who are also the directors of the charity for the purposes of company law, are responsible for the preparation of the financial statements and for being satisfied that they give a true and fair view, and for such internal control as the trustees determine is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error. In preparing the financial statements, the trustees are responsible for assessing the charity's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless the trustees either intend to cease operations, or have no realistic alternative but to do so.

### **AUDITORS' RESPONSIBILITIES FOR THE AUDIT OF THE FINANCIAL STATEMENTS**

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance but is not a guarantee that an audit conducted in accordance with ISAs (UK) will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

We design procedures in line with our responsibilities, outlined above, to detect material misstatements in respect of irregularities, including fraud. The extent to

which our procedures are capable of detecting irregularities, including fraud, is detailed below.

### **THE EXTENT TO WHICH THE AUDIT WAS CONSIDERED CAPABLE OF DETECTING IRREGULARITIES, INCLUDING FRAUD**

Irregularities, including fraud, are instances of non-compliance with laws and regulations. The objectives of our audit are to obtain sufficient appropriate audit evidence regarding compliance with laws and regulations that have a direct effect on the determination of material amounts and disclosures in the financial statements, to perform audit procedures to help identify instances of non-compliance with other laws and regulations that may have a material effect on the financial statements and to respond appropriately to identified or suspected non-compliance with laws and regulations identified during the audit.

However, it is the primary responsibility of management, with the oversight of those charged with governance, to ensure that the entity's operations are conducted in accordance with applicable laws and regulations and for the prevention and detection of fraud.

In identifying and assessing risks of material misstatement in respect of irregularities, including fraud, the audit engagement team:

- obtained an understanding of the nature of the charity, including the legal and regulatory framework that the charity operates in and how the charity is complying with the legal and regulatory framework;
- inquired of management, and those charged with governance, about their own identification and assessment of the risks of irregularities, including any known actual, suspected or alleged instances of fraud; and
- discussed matters about non-compliance with laws and regulations and how fraud might occur including assessment of how and where the financial statements may be susceptible to fraud.

As a result of these procedures we consider the most significant laws and regulations that have a direct impact on the financial statements are:

## Appendix A

- FRS 102 The Financial Reporting Standard applicable in the UK and Republic of Ireland (United Kingdom Generally Accepted Accounting Practice);
- The Statement of Recommended Practice applicable to charities preparing their accounts in accordance with the Financial Reporting Standard applicable in the UK and Republic of Ireland (The FRS 102 Charities SORP);
- The Charities (Accounts and Reports) Regulations 2008; and
- The Charities Act 2011.

The audit engagement team identified the risks of transactions with unidentified related parties and management override of controls as the areas where the financial statements were most susceptible to material misstatement due to fraud.

Based on the results of our risk assessment we designed audit procedures to identify fraud or non-compliance with such laws and regulations identified above. The relevant audit procedures performed included but were not limited to:

- obtaining the trustees' register of interests and corroborating entries by reviewing entries on the Charities Commission website;
- inspecting minutes of Trustees' meetings;
- maintaining vigilance throughout the audit work to identify all related parties;
- identifying and reviewing unusual accounting transactions and journal entries;
- discussions with management including consideration of known or suspected instances of non-compliance with laws and regulations and fraud; and
- performing a detailed review of the completeness and accuracy of disclosures.

A further description of our responsibilities is available on the Financial Reporting Council's website at: <https://www.frc.org.uk/auditorsresponsibilities>. This description forms part of our auditor's report.

**James Robert Marchant FCCA (Senior Statutory Auditor)**

**For and on behalf of Croucher Needham (Essex) LLP** Date: .....

**Chartered Certified Accountants  
Statutory Auditor**

Market House  
10 Market Walk  
Saffron Walden  
Essex  
CB10 1JZ

THE INSTITUTE OF MATHEMATICS AND ITS APPLICATIONS  
INCOME AND EXPENDITURE ACCOUNT  
FOR THE PERIOD 1st January - 31 December  
2021

|                                       | Unrestricted<br>Funds<br>2021 | Restricted<br>Funds<br>2021 | Total<br>Funds<br>2021 | Total<br>Funds<br>2020 |
|---------------------------------------|-------------------------------|-----------------------------|------------------------|------------------------|
|                                       | £                             | £                           | £                      | £                      |
| <b>Incoming resources</b>             |                               |                             |                        |                        |
| Entrance/Transfer fees                | 4,658                         |                             | 4,658                  | 3,513                  |
| Subscriptions                         | 334,168                       |                             | 334,168                | 328,752                |
| Publications                          | 546,198                       |                             | 546,198                | 620,343                |
| Miscellaneous Income                  | 887                           |                             | 887                    | 435                    |
| Appeal fund and bequests              | 15,055                        |                             | 15,055                 | 250                    |
| Interest Received                     | 4,758                         | 12                          | 4,770                  | 8,524                  |
| Conference income                     | 39,411                        |                             | 39,411                 | (3,226)                |
| Careers in M & 50th Ann               | 0                             |                             | 0                      | 0                      |
| Scholarships & HE STEM                | 119,920                       |                             | 119,920                | 128,053                |
|                                       | 1,065,055                     | 12                          | 1,065,067              | 1,086,643              |
| <b>Resources expended</b>             |                               |                             |                        |                        |
| Salaries, pension & NHI               | 584,386                       |                             | 584,386                | 571,733                |
| Other staff expenses                  | 12,553                        |                             | 12,553                 | 2,859                  |
| Office overheads                      | 17,959                        |                             | 17,959                 | 23,640                 |
| Telephone                             | 4,042                         |                             | 4,042                  | 4,458                  |
| General printing, post. & stat.       | 2,065                         |                             | 2,065                  | 6,649                  |
| Office equipment hire & maint.        | 5,656                         |                             | 5,656                  | 4,515                  |
| Council and committee                 | 6,961                         |                             | 6,961                  | 10,159                 |
| Travel                                | 3,570                         |                             | 3,570                  |                        |
| Branches and groups                   | 1,000                         |                             | 1,000                  | 1,000                  |
| Education                             | 1,501                         |                             | 1,501                  | 2,356                  |
| Publications (inc. Maths Today)       | 94,470                        |                             | 94,470                 | 68,190                 |
| General expenses                      | 8,284                         |                             | 8,284                  | 3,247                  |
| Bank charges                          | 6,377                         |                             | 6,377                  | 1,831                  |
| Audit and accounts                    | 54,629                        |                             | 54,629                 | 50,800                 |
| Depreciation                          | 12,798                        |                             | 12,798                 | 8,702                  |
| Amortisation of property              | 0                             |                             | 0                      | 3,066                  |
| Subscription to other bodies          | 14,789                        |                             | 14,789                 | 20,577                 |
| Repairs and renewals                  | 480                           |                             | 480                    | 0                      |
| Web-site expenses                     | 1,022                         |                             | 1,022                  | 8,309                  |
| Presidential Address                  | 2,750                         |                             | 2,750                  | 2,309                  |
| Conference Direct Costs               | 3,469                         |                             | 3,469                  | 3,518                  |
| Grants/Donations                      | 51,517                        |                             | 51,517                 | 34,302                 |
| Strategy Review Weekend               | 43                            |                             | 43                     | 0                      |
| Information Technology                | 3,693                         |                             | 3,693                  | 0                      |
| I. T. Consultancy                     | (34)                          |                             | (34)                   | 1,771                  |
| Careers in M & 50th Ann               | 7,900                         |                             | 7,900                  | 6,634                  |
| Scholarships & HE STEM                | 39,915                        |                             | 39,915                 | 42,192                 |
| Irrecoverable VAT                     | 8,311                         |                             | 8,311                  | 13,377                 |
| Bad Debt                              | 0                             |                             | 0                      | 0                      |
| De Morgan House Rental                | 11,148                        |                             | 11,148                 | 13,449                 |
| De Morgan House Other                 | 5,491                         |                             | 5,491                  | 6,624                  |
| 18 Nelson Street Rental               | 6,250                         |                             | 6,250                  | 3,503                  |
| 18 Nelson Street Other                | 3,750                         |                             | 3,750                  | 2,102                  |
| Development - SRW                     | 329                           |                             | 329                    | 126                    |
| Development - Membership Growth       | 0                             |                             | 0                      | 52                     |
| Development - Database & Web          | 4,310                         |                             | 4,310                  | 4,285                  |
| Development - Services                | 0                             |                             | 0                      | 2,784                  |
|                                       | 981,383                       | 0                           | 981,383                | 929,119                |
| <b>Unrestricted Surplus/(Deficit)</b> | <b>83,671</b>                 | <b>12</b>                   | <b>83,684</b>          | <b>157,525</b>         |
| <b>Incoming resources</b>             |                               |                             |                        |                        |
| Publications                          | 0                             | 0                           | 0                      | 80,000                 |
|                                       | 0                             | 0                           | 0                      | 80,000                 |
| <b>Resources expended</b>             |                               |                             |                        |                        |
| Publications                          |                               | 17,777                      | 17,777                 | 6,289                  |
|                                       | 0                             | 17,777                      | 17,777                 | 6,289                  |
| <b>Restricted Surplus/(Deficit)</b>   | <b>0</b>                      | <b>(17,776)</b>             | <b>(17,776)</b>        | <b>73,711</b>          |
| <b>Overall Surplus/(Deficit)</b>      | <b>83,671</b>                 | <b>(17,764)</b>             | <b>65,907</b>          | <b>231,236</b>         |

## APPENDIX A

### THE INSTITUTE OF MATHEMATICS AND ITS APPLICATIONS BALANCE SHEET AS AT 31 December 2021

|                                           | Unrestricted<br>£ | 31-Dec-21<br>Restricted<br>£ | Total<br>£ | Total<br>£ | 31-Dec-20<br>Total<br>£ |
|-------------------------------------------|-------------------|------------------------------|------------|------------|-------------------------|
| <b>FIXED ASSETS</b>                       |                   |                              |            |            |                         |
| Freehold Property                         | 92,024            |                              |            | 96,624     |                         |
| Fixtures and equipment                    | 11,162            |                              |            | 15,357     |                         |
|                                           |                   |                              | 103,186    |            | 111,981                 |
| <b>CURRENT ASSETS</b>                     |                   |                              |            |            |                         |
| Stocks                                    | 4,843             |                              |            | 1,485      |                         |
| Trade debtors                             | 301,385           |                              |            | 317,324    |                         |
| Prepayments and accrued inc.              | 37,831            |                              |            | 31,464     |                         |
| Cash at bank and in hand                  | 1,504,042         |                              |            | 1,378,603  |                         |
|                                           | 1,848,102         | -                            | 1,848,102  | 1,728,876  |                         |
| CREDITORS due within 1 year               | 473,134           |                              | 473,134    | 428,610    |                         |
| <b>NET CURRENT ASSETS/(LIABILITIES)</b>   |                   |                              | 1,374,968  |            | 1,300,266               |
|                                           |                   |                              | 1,478,154  |            | 1,412,247               |
| <b>CAPITAL AND RESERVES</b>               |                   |                              |            |            |                         |
| Income and expenditure account            |                   |                              | 1,344,818  |            | 1,261,149               |
| Restricted income and expenditure account |                   |                              | 133,335    |            | 151,099                 |
|                                           |                   |                              | 1,478,154  |            | 1,412,247               |
| <b>NOTES</b>                              |                   |                              |            |            |                         |
| Creditors due within 1 year               |                   |                              |            |            |                         |
| Trade creditors                           | 19,290            |                              |            | 3,642      |                         |
| Social security and other taxes           | 111,454           |                              |            | 63,693     |                         |
| Accruals and deferred income              | 342,390           |                              |            | 361,275    |                         |
|                                           | 473,134           |                              |            | 428,610    |                         |
| <b>INCOME AND EXPENDITURE ACCOUNT</b>     |                   |                              |            |            |                         |
| Balance as at 1st January 2021            | 1,261,147         | 151,100                      | 1,412,247  |            |                         |
| Surplus for the 12 months                 | 83,672            | (17,765)                     | 65,907     |            |                         |
| Balance as at 31 December 2021            | 1,344,819         | 133,335                      | 1,478,154  |            |                         |

## **APPENDIX B**

The IMA continues to work with many organisations in Mathematics, Science and Engineering. The Institute's representatives were:

### ***UK Maths***

- **CMS**

Dr N. Chamberlain (SNC Lavalin Atkins)  
Dr R. Pinch (Vice President Professional Affairs and Industry))  
Mr D. Youdan (Executive Director) until 6 July 2021 and Mr A. Peacock (Interim Executive Director) from 7 July 2021

- **Heads of Departments of Mathematical Sciences**

Professor M. Grove (University of Birmingham)

- **Joint Mathematical Council**

Professor P. Glaister (University of Reading)

- **sigma**

Professor D. Lawson (Coventry University)

### ***UK SET and Others***

- **EPSRC**

Dr N. Chamberlain (SNC Lavalin Atkins)  
Dr M. Barons (University of Warwick)  
Mr D. Youdan (Executive Director) until 6 July 2021 and Mr A. Peacock (Interim Executive Director) from 7 July 2021

- **Science Council**

Mr A. Peacock (Assistant Director and then as Interim Executive Director from 7 July 2021  
Mr D. Youdan (Executive Director) until 6 July 2021

### ***International***

- **ICIAM**

Professor I.D. Abrahams (Isaac Newton Institute for Mathematical Sciences)  
Professor I. Duff (STFC)

## Glossary

**ACME** — Advisory Committee on Mathematics Education  
**AMS** — Australian Mathematical Society  
**AR** — Academic Representative(s)  
**BEIS** — Department for Business, Energy and Industrial Strategy  
**BMI** — Big Mathematics Initiative  
**BSHM** — British Society for the History of Mathematics  
**CMath** — Chartered Mathematician  
**CMS** — Council for the Mathematical Sciences  
**CPD** — Continuing Professional Development  
**DfE** — Department for Education  
**ECM** — Early Career Mathematicians  
**ED** — Executive Director  
**EdMS** — Edinburgh Mathematical Society  
**EPSRC** — Engineering and Physical Sciences Research Council  
**EuMS** — European Mathematical Society  
**FE** — Further Education  
**FRS** — Fellow of the Royal Society  
**GCSE** — General Certificate of Secondary Education  
**HE** — Higher Education  
**HEdSA** — Higher Education Services Area  
**HEI** — Higher Education Institutions  
**HoDoMS** — Heads of Departments of Mathematical Sciences  
**ICIAM** — International Council for Industrial and Applied Mathematics  
**ICMS** — International Centre for Mathematical Sciences  
**ICTP** — International Centre for Theoretical Physics  
**IF** — Impact Factor  
**IMA** — Institute of Mathematics and its Applications  
**InFOMM** — Industrially Focused Mathematical Modelling  
**INI** — Isaac Newton Institute for Mathematical Sciences  
**iQTS** — International Qualified Teacher Status  
**KE** — Knowledge Exchange  
**KS2** — Key Stage 2  
**KS3** — Key Stage 3  
**LMS** — London Mathematical Society  
**MA** — The Mathematical Association  
**MEI** — Mathematics in Education and Industry  
**NANAMIC** — National Association of Numeracy and Mathematics in Colleges  
**NCETM** — National Centre for Excellence in the Teaching of Mathematics  
**OBE** — Order of the British Empire  
**OR** — Operational Research  
**ORS** — Operational Research Society  
**OU** — Open University  
**OUP** — Oxford University Press  
**PAC** — Professional Affairs Committee  
**RSS** — Royal Statistical Society  
**S&FE** — Schools and Further Education  
**SET** — Science, Engineering and Technology

**SIAM** — Society for Industrial and Applied Mathematics  
**SIAM UKIE** — UK and Republic of Ireland Section of SIAM  
**STEM** — Science, Technology, Engineering and Mathematics  
**STFC** — Science and Technology Facilities Council  
**UCL** — University College London  
**UKRI** — UK Research and Innovation  
**UNSW** — University of New South Wales