MAGIC Annual Report

June 2012 – June 2013

Contents

1   Introduction

The MAGIC (Mathematics Access Grid Instruction and Collaboration) project is an EPSRC sponsored which project commenced in October 2006 and is aimed at sharing postgraduate lectures in mathematics for PhD students using Access-Grid technology. The consortium currently has 19 universities as partners with both small and large departments being fully involved in the delivery of the programme of lectures in addition to their students being able to fully participate in the lectures.

Earlier annual reports on MAGIC can be found at
http://www.maths-magic.ac.uk/annual_reports

The annual reports give extensive detail on how the project has developed over the years and contains information on the suite of courses which MAGIC has delivered and some of the technical and other issues that MAGIC has encountered.

The current MAGIC website
http://www.maths-magic.ac.uk
contains last years annual report, details of the current programme and the courses available.

1.1 Membership

Table 1. A list of MAGIC Consortium partners

University of Birmingham	Loughborough University
Durham University	University of Manchester
University of Cardiff	University of Newcastle
University of East Anglia	University of Nottingham
University of Exeter	University of Reading
Keele University	University of Sheffield
University of Lancaster	University of Southampton
University of Leeds	University of Surrey
University of Leicester	University of York
University of Liverpool	

1.2 MAGIC Management Committee (2012-2013)

Table 2. MAGIC Management Committee

Prof. Jitesh S. B. Gajjar (University of Manchester)	Director of MAGIC
Prof. Peter Ashwin (Exeter University)	Deputy Director
Dr Giampaolo D'Allesandro (Southampton University)	
Prof. Alastair Rucklidge (University of Leeds)	
Dr Ian McIntosh (University of York)	Programme Committee Chair
Dr Martin Turner (University of Manchester)	
Professor Neil Strickland (Sheffield University)	
James Perrin	MAGIC Technical Officer
Andrew Smith / Julie Thompson	MAGIC Administrator

1.3 MAGIC Programme Committee (2012-2013)

Table 3. Programme Committee

Dr Ian McIntosh (University of York)	Chair
Prof. Jitesh S. B. Gajjar (University of Manchester)	Ex Officio
Prof. Alexei Bolsinov (Loughborough University)	
Dr Gianne Derks (University of Surrey)	
Dr Tobias Kuna (University of Reading)	
Prof. Tim Phillips (Cardiff University)	
Prof. Mary Rees (University of Liverpool)	
Prof. Richard Tew (Univeristy of Nottingham)	

1.4 MAGIC Academic Steering Committee (2012-2013)

Table 4. A list of members of the Academic Steering Committee

Prof. Nigel Peake	Chair of Academic Steering Committee
Prof. Jitesh S. B. Gajjar (University of Manchester)	Director of MAGIC
Dr Ian McIntosh (University of York)	Chair of Programme Committee
Prof. Peter Ashwin (Exeter University)	
Dr Mark Blyth (University of East Anglia)	
Dr Alexey Bolsinov (Loughborough University)	
Dr Giampaolo D'Alessandro (Southampton University)	
Dr Gianne Derks (University of Surrey)	
Prof. Yibin Fu (Keele University)	
Dr Kevin Houston (University of Leeds)	
Prof. Peter Jorgensen (Newcastle University)	
Dr Tobias Kuna (University of Reading)	
Prof. Martin Lindsay (Lancaster University)	
Prof. Sergei Petrovskii (University of Leicester)	
Prof. Tim Phillips (Cardiff University)	
Prof. Mary Rees (University of Liverpool)	
Dr Dirk Scheutz (Durham University)	
Prof. Neil Strickland (University of Sheffield)	
Dr Gregor Tanner (University of Nottingham)	
Dr Qianxi Wang (University of Birmingham)	

1.5 Minutes

The minutes of the meetings of the MAGIC MC, PC and ASC, together with the agenda papers can be found at:

https://maths-magic.ac.uk/admin/management/list_meetings.php

2 Progress and activities 2012-2013

2.1 MAGIC Administrator and Technical Support Posts

In November 2012 Andrew Smith resigned as MAGIC Administrator (0.5FTE), and since February 2013 Julie Thompson has now taken over this role. Technical support is provided by the MAGIC Technical Support person (0.4FTE) James Perrin. Both are employed at the University of Manchester. Professor Peter Ashwin (Exeter) is now Deputy Director of MAGIC.

2.2 Website

The MAGIC website has been up and running without any significant issues over the last year. The last pieces of major development were rewriting the course proposal and programme decision making tools, and modifying the course assignments to the single exam assessment format. The exam script submission handling has been working smoothly with no technical issues reported so far. Other minor changes to the website include a modified registration process in which students cannot complete the registration process until some additional details such as supervisor names, emails, are entered. Also everyone now entered on the database is now required (for legal reasons) to give their consent on the possibility of them being recorded in MAGIC lectures/sessions.

2.3 Recording of lectures

The recording of lectures has continued largely successfully. A major IT incident at Manchester meant that network and hence recordings were lost over a couple of days around 13th March 2013. During the year a few sites requested and were allowed access to recordings for lectures they could not receive because of technical problems at their site.

2.4 Other activities and use of the MAGIC facilities

In addition to the MAGIC lectures the MAGIC rooms and facilities have been used for other activities. These include:

The MAGICAL BOOKS for INDUSTRY project (http://www.maths.manchester.ac.uk/magicalbooks). These include lecture courses on "The mathematics of Risk analysis", "Advanced Analytical Methods for Continuum Mechanics", "CFD , The finite-volume method", "CFD, The finite element method", delivered between September 2011 to August 2012.

On 9th October, 2012, the MAGIC popular lecture was delivered by Professor Peter Grindrod CBE (University of Reading) on "Dynamics of Social perceptions, Attitudes Norms and Applications to Digital Media and Security".

30th April 2013 'CliMathNet Seminar: Sensing the natural world' by Prof. Marian Scott (University of Glasgow), organised by the University of Exeter.

28th May 2013 'CliMathNet Seminar: Data assimilation and modelling the carbon cycle' by Prof. Ian Roulstone (University of Surrey), organised jointly by the University of Surrey and University of Exeter.

4th June 2013 'AG Dynamics Seminar: Symbolic Toolkit for Exploration of Deterministic Chaos' by Prof. Andrey Shilnikov (Georgia State University), organised jointly by the University of Exeter and the University of Leeds.

2.5   Technical problems and issues

There have been 26 recorded incidents to do with technical problems affecting lectures on the MAGIC website covering the period 1 June 2012 to 1 June 2013. This of course excludes problems not reported and formally logged via the website. Bad audio from a site is the most frequent in the list of reported complaints. Birmingham had a number of issues with local power failures affecting their node in February 2013, as well as other problems subsequently with audio fading in and out. At a similar time Leeds had some problems with microphones not working or being connected properly. In March 2013, MAGIC062 lectures from Cardiff have had recurring issues with video not being transmitted on several occasions.

3   Academic Aspects 2012-2013

3.1   Academic Programme 2012-2013

The list of courses given in the 2012-13 sessions (and also for previous sessions) can be viewed at the MAGIC website at
http://maths-magic.ac.uk/courses.php
The above site also gives details of the individual courses and syllabi.

3.2   Questionnaires and feedback

An online system of questionnaires was set up in 2007 and implemented from Spring 2008 for all the courses delivered. The results of the questionnaire data can be viewed at (login required):
https://maths-magic.ac.uk/admin/programme/view_questionnaires.php

Since 2012, students registered on MAGIC who are in the final stages of their PhD studies, or who have completed their PhD studies, are asked to complete an online alumni questionnaire. The questionnaire was issued in early April 2013 to students registered for courses in 2009-10. The results may be viewed at the above website. There were 30/289 responses to the questionnaire. On question 3, 'Has the training given by MAGIC proved helpful to you in broadening your PhD experience and research?', 20/30 found it mostly helpful or extremely helpful, and 5/30 responded negatively. Also 21/30 said they would recommend MAGIC to someone starting a PhD in Mathematics.

Feedback from the lecturers on all the courses has been obtained via online course reports and the responses are available for viewing at the same site (cited earlier) along with other questionnaire results.

The feedback from students and staff (via the questionnaire results, forums discussions) is used by the Programme Committee when it reviews the programme each year. The minutes of the Programme Committee contain some of the feedback and summarize the outcomes from the review.

3.3 Assessment Policies

Following suggestions made at the Academic Steering Committee meeting in 2012, the MAGIC assessment policy was revised and the current MAGIC Course Assessment Policy may be found on the current MAGIC website here:

https://maths-magic.ac.uk/admin/documentation/documentation_index.php

In particular, the current policy requires that each MAGIC course will have a single open-book style examination/assessment at the end of the module, and this will be done over a two week period after the end of the course. Lecturers are required to produce a pass/fail mark for each student requiring assessment, and to give feedback on the assessment via the MAGIC website.

A payment of £10 is made to lecturers for each pass/fail assessment of student recorded on the MAGIC website.

3.4 Academic Achievements

Congratulations to Charles Walkden who has won a SIAM competition prize for his 'Ergodic Theory' MAGIC lecture bringing important recognition in the community for the MAGIC project.

3.5 Registration data

The Table 5 below shows the number of students registered for each course together with the number requiring formal assessment. The corresponding figures for previous years are also displayed in the same table. (It is noted that formal assessment for all courses started with the 2011-12 session). Table 6 shows the same data but broken down via MAGIC partner.

Table 5 ._Total number of course registrations   and numbers of students requiring formal assessment. The number of students in the third row is the number of people who registered for at least one course in that session and excludes those names added to the database but not signing up courses._

	2012-13	2011-12	2010-11	2009-10	2008-09
Registrations (assessed)	646 (434=67%)	562(283=50%)	764	649	
No of Students	256	214	246	236	221

Table 6. _Same data as in Table 5 but broken down by institution. Student numbers is a count of the numbers of students on the database in the particular session who registered for at least one course._

	2012-13 Stud Nos	2012-13 Reg	2011-12 Stud Nos	2011-12 Reg
External	1	6	0	0
Birmingham	23	54	21	57
Cardiff	7	27	6	19
Durham	6	25	6	22
East Anglia	13	34	17	31
Exeter	13	33	9	24
Keele	1	2	3	6
Lancaster	3	14	2	3
Leeds	33	64	28	52
Leicester	12	24	2	2
Liverpool	25	45	26	46
Loughborough	21	65	24	82
Manchester	33	102	17	55
Newcastle	10	21	9	25
Nottingham	9	16	7	14
Reading	4	6	4	6
Sheffield	15	31	6	23
Southampton	14	36	14	38
Surrey	4	13	3	14
York	9	28	10	43
Total	256	646	214	562

In Tables 7 and 8 we show assessment data for each course broken down by course. In Tables 9,10 we show registration data for each node and broken down by course. Table 11 shows a summary of the data for the last few years.

Table 7 Autumn 2012-2013 Courses with numbers of registered students and number of students being assessed.

	Course	Registered	Assessed
MAGIC002	Differential topology and Morse theory (Dirk Schuetz - Durham)	13	4 (30.77%)
MAGIC008	Lie groups and Lie algebras (Alexey Bolsinov - Loughborough)	31	21 (67.74%)
MAGIC009	Category Theory (Jonathan Kirby - East Anglia)	35	26 (74.29%)
MAGIC022	Mathematical Methods (Jitesh Gajjar - Manchester)	35	29 (82.86%)
MAGIC057	Spectral Theory of Ordinary Differential Operators (Karl Michael Schmidt - Cardiff)	10	6 (60.00%)
MAGIC059	Dynamical Systems I (Flows) (Alastair Rucklidge - Leeds)	30	18 (60.00%)
MAGIC061	Functional Analysis (Martin Lindsay - Lancaster)	16	11 (68.75%)
MAGIC063	Differentiable Manifolds (James Vickers - Southampton)	25	21 (84.00%)
MAGIC065	Stochastic Processes (Alexander Veretennikov - Leeds)	26	13 (50.00%)
MAGIC066	Numerical Analysis (Tim Phillips - Cardiff)	38	30 (78.95%)
MAGIC067	Integrable Systems (Alexander Veselov - Loughborough)	20	12 (60.00%)
MAGIC069	Introduction to Quantum Information (Paul Busch - York)	13	7 (53.85%)
MAGIC071	Erlangen program in geometry and analysis: SL(2,R) case study (Vladimir V. Kisil - Leeds)	9	5 (55.56%)
MAGIC073	Commutative Algebra (Moty Katzman - Sheffield)	27	20 (74.07%)
MAGIC075	Representation Theory of Groups (Kay Magaard - Birmingham)	18	9 (50.00%)
MAGIC080	Geometric Mechanics (Cesare Tronci - Surrey)	10	6 (60.00%)
Total		356	238 (66.85%)

Table 8 Spring 2012-2013 courses showing numbers registered and numbers of students being assessed.

MAGIC010	Ergodic Theory (Charles Walkden - Manchester)	19	18 (94.74%)
MAGIC014	Hydrodynamic Stability Theory (Jonathan Healey - Keele)	22	17 (77.27%)
MAGIC021	Nonlinear Waves (Roger Grimshaw - Loughborough)	19	12 (63.16%)
MAGIC028	Geometric Structures on surfaces and Teichmuller Space (Mary Rees - Liverpool)	15	8 (53.33%)
MAGIC039	Introduction to Quantum Graphs (Sven Gnutzmann - Nottingham)	3	2 (66.67%)
MAGIC040	Operator Algebras (Michael Dritschel - Newcastle)	7	5 (71.43%)
MAGIC046	Introduction to Equivariant Bifurcation Theory (Peter Ashwin - Exeter)	11	10 (90.91%)
MAGIC049	Modular Forms (Jens Funke - Durham)	5	1 (20.00%)
MAGIC050	Set Theory (Mirna Dzamonja - East Anglia)	25	17 (68.00%)
MAGIC058	Theory of Partial Differential Equations (David Harris - Manchester)	28	22 (78.57%)
MAGIC060	Dynamical Systems II (Maps) (Lasse Rempe-Gillen - Liverpool)	7	5 (71.43%)
MAGIC062	Introductory Functional Analysis (John Pryce - Cardiff)	29	17 (58.62%)
MAGIC064	Algebraic Topology (Frank Neumann - Leicester)	33	25 (75.76%)
MAGIC072	Number Theory (Neil Dummigan - Sheffield)	14	8 (57.14%)
MAGIC074	Algebraic Geometry (Steve Donkin - York)	35	16 (45.71%)
MAGIC079	Inverse Problems (Daniel Lesnic - Leeds)	20	13 (65.00%)
Total		293	196 (66.9%)

Table 9. Data for Autumn 2012-2013 courses showing registration data broken down by node and course code. Note that in the 'Autumn Course code' row, the number in bold refers to a MAGIC course code, eg. 061 is MAGIC061.

Autumn course code:	002	008	009	022	057	059	061	063	065	066	067	069	071	073	075	080	Node Totals
External			1	1			1										3
Birmingham		5	1	5		2		1	4	4		1		2	1	2	28
Cardiff				2	2	1	2	3		2		1					13
Durham	4	2	1		1		2						1	2	3		16
East Anglia	1	3	4	1		1		1		5			1	4	1		22
Exeter			1	4	1				1					3	1		11
Keele				1													1
Lancaster			3			2	1							1	1		8
Leeds		4	5	2		5	1		2		4	2	3	4	1		33
Leicester	2		4			1	1		1	5				1			15
Liverpool	1	1	3			2		1	9	3	2						22
Loughborough		4		2	2	5	2	2	3	6	7					2	35
Manchester	1	3	5	7	1	7		2	3	7	1	3		6	2	3	51
Newcastle				4	1	2						2	1	1	2		13
Nottingham		2	2	1					2			1	1		1	1	11
Reading					1	1	1			2							5
Sheffield	2	4	1				3	2				1	1	3	2		19
Southampton	1	1	3	2				6		4		1	2		2		22
Surrey				2				1			2	1				2	8
York	1	2	1	1	1	3	1	4	1		1	1			1		18
Autumn course code:	002	008	009	022	057	059	061	063	065	066	067	069	071	073	075	080	
Course Totals	13	31	35	35	10	30	16	24	26	38	19	13	9	27	18	10	354

Table 10. Data for Spring 2012-2013 showing registration data broken down by node and course code.

Spring Course Code	010	014	021	028	039	040	046	049	050	058	060	062	064	072	074	077	079	Node Totals
*External			1						1			1						3
Birmingham	3	4	2				1		1	3	1	2	2	2	4		1	26
Cardiff		1	3		1					2		2	1	1	1		2	14
Durham	1			2					1					1	4			9
East Anglia	1	1	1						2		1	1	3		2			12
Exeter	1	1					5	1	1	1		1	4	4	2		1	22
Keele		1																1
Lancaster	1					2			1			2						6
Leeds		2	5			1			5	1		2	2		6		7	31
Leicester				1								2	4		2			9
Liverpool	2			2			1		2			6	4	1	3		2	23
Loughborough	7	3	2	1	1		1		1	5	2	5			1	1		30
Manchester	1	7	3	2			2	3	2	12	1	3	3	2	5		5	51
Newcastle		1		1					1	1	1	1	2					8
Nottingham	1			1		1	1						1					5
Reading	1																	1
Sheffield			1	1					2				2	2	3		1	12
Southampton		1		2	2	1			3				4		1			14
Surrey			1					1		1			1		1			5
York				2		1			2	2	1	1			1			10
Spring Course Code	**010**	**014**	**021**	**028**	**039**	**040**	**046**	**049**	**050**	**058**	**060**	**062**	**064**	**072**	**074**	**077**	**079**	
Course Totals	19	22	19	15	3	7	11	5	25	28	7	29	33	14	35	1	19	292

Table 11. *Summary of registration data per node.*

	Autumn 2012-2013	Spring 2012-2013	Total 2012-2013	Autumn 2011-2012	Spring 2011-2012	Total 2011-2012	Autumn 2010-2011	Spring 2010-2011	Total 2010-2011	Autumn 2009-2010	Spring 2009-2010	Total 2009-2010
External	3	3	6									
Birmingham	28	26	54	28	29	57	22	22	44	42	19	61
Cardiff	13	14	27	11	8	19	17	11	28	18	13	31
Durham	16	9	25	8	14	22	14	9	23	19	29	48
East Anglia	22	12	34	16	15	31	27	18	45	15	13	28
Exeter	11	22	33	12	12	24	38	20	58	19	17	36
Keele	1	1	2	2	4	6	3	0	3	5	1	6
Lancaster	8	6	14	2	1	3	23	14	37	5	1	6
Leeds	33	31	64	28	24	52	29	25	54	22	55	77
Leicester	15	9	24	2	0	2	8	6	14	4	2	6
Liverpool	22	23	45	22	24	46	15	10	25	16	10	26
Loughborough	35	30	65	51	31	82	60	61	121	40	43	83
Manchester	51	51	102	29	26	55	73	81	154	67	41	108
Newcastle	13	8	21	17	8	25	20	16	36	8	21	29
Nottingham	11	5	16	7	7	14	2	5	7	22	5	27
Reading	5	1	6	5	1	6	9	2	11	5	4	9
Sheffield	19	12	31	10	13	23	26	11	37	11	6	17
Southampton	22	14	36	18	20	38	20	11	31	8	10	18
Surrey	8	5	13	6	8	14	12	0	12	2	1	3
York	18	10	28	23	20	43	12	12	24	23	7	30
Total	354	292	646	297	265	562	430	334	764	351	298	649