Oxford SIAM Student Chapter – Annual Report 2009/2010

The Oxford SIAM Student Chapter was founded in 2008 and has since grown to incorporate around 200 members, including undergraduates, graduates, postdocs, faculty and alumni of the University of Oxford (for comparison, as of July 2009, the SIAM UK/Ireland Section membership was 450, 211 of which students).

Since autumn 2009 the Chapter has been registered with the proctors of the University, meaning it is fully approved as a society at the university. An application has been submitted for the use of the university name in the name of the Chapter (Oxford University SIAM Student Chapter), which is expected to go through in Summer 2010.

In the following we report on events organized by the Chapter in the university year 2009/2010 and give an outlook on 2010/2011.

1 Drinks Reception in Autumn Term

The first event of the year traditionally is a drinks reception in the first week of autumn term (called Michaelmas Term in Oxford). This year the event took place on the 16 October 2009 in the Common Room of the Mathematical Institute. It was an introductory/welcome back social that should give new graduate students or undergraduates interested in applied mathematics the chance to find out about the Chapter. There was plenty of opportunity to catch up with old Chapter members, hear about the events that were planned for the year and sign up any friends who may have been interested in joining the Chapter. It also gave the committee the chance to hear ideas and suggestions for events or other services from members. Free drinks, nibbles and sparkling mathematical chat abounded.

2 3rd Annual Conference

The 3rd annual Oxford SIAM Student Chapter Conference with close to 100 attendees took place on Tuesday, 9 February at St Anne's College, Oxford. There were 2 plenary talks, 5 student presentations and a poster competition.

The first plenary talk was given by Prof. Ian Stewart, FRS (University of Warwick), well-known for his popular mathematics books and articles in the Scientific American. The talk was entitled "Josephson Junctions, Network Symmetries, and Projective Geometry" Prof. Paul Bressloff (OCCAM, Oxford) gave a hugely entertaining and stunning presentation of some of his work on the mathematics of visual hallucinations.

The five student presentations covered a wide range of topics, including statistics in medicine, fluid mechanics and compressed sensing. In detail:

Figure 1: Left: registration before the first talk. Right: audience awaiting the talk by Ian Stewart.

Maria Roopa Thomas (Queen Mary University)	"Bayesian decision procedures for dose escalation - a reanalysis"
Dave Hewett (University of Oxford)	"Localising an impulsive acoustic source in an urban environment"
Chris Munro (University of Manchester)	"A General Purpose Algorithm for Solving Polynomial Eigenproblem"
Matt Hennessy (University of Oxford)	"Flow transitions in a differentially heated rotating channel of fluid"
Bubacarr Bah (University of Edinburgh)	"Improved RIC Bounds for Gaussian Matrices with applications in Compressed Sensing"

The official part of the day was rounded off with a poster competition. The first prize was awarded to Ornella Cominetti (Oxford, "DifFUZZY: A fuzzy spectral clustering algorithm for complex data sets"), and the second prize to Sevil Payvandi (London, " Mathematical Model of Unsteady Blood Flow in a Curved Elastic Artery").

The very successful and enjoyable event culminated in a 4 course conference dinner at St Anne's College.

The chapter was delighted to host representatives of the newly founded SIAM Student Chapters in Manchester and Edinburgh. First links between the Chapters have been established and will lead to more exchange of ideas and experiences in the future.
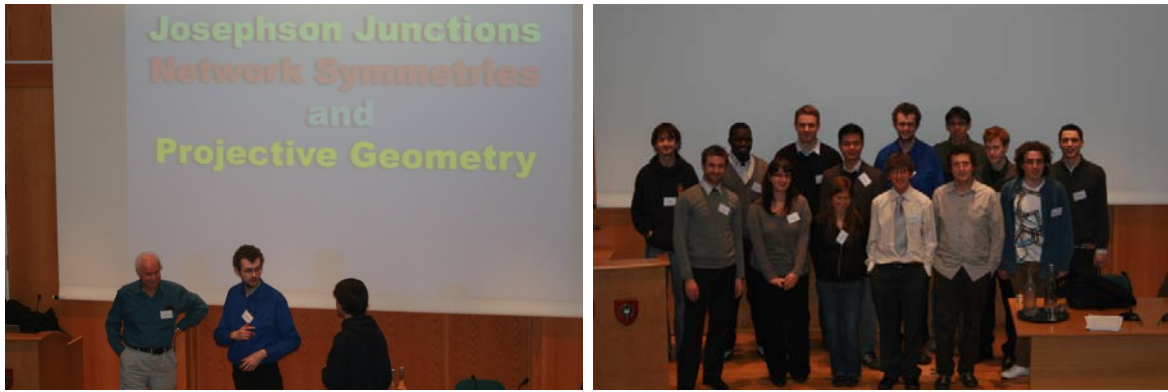
Figure 2: Left: Ian Stewart, president Thomas Woolley, and IT officer Aaron Smith before the first talk. Right: group picture of committee, speakers and poster competition winners.

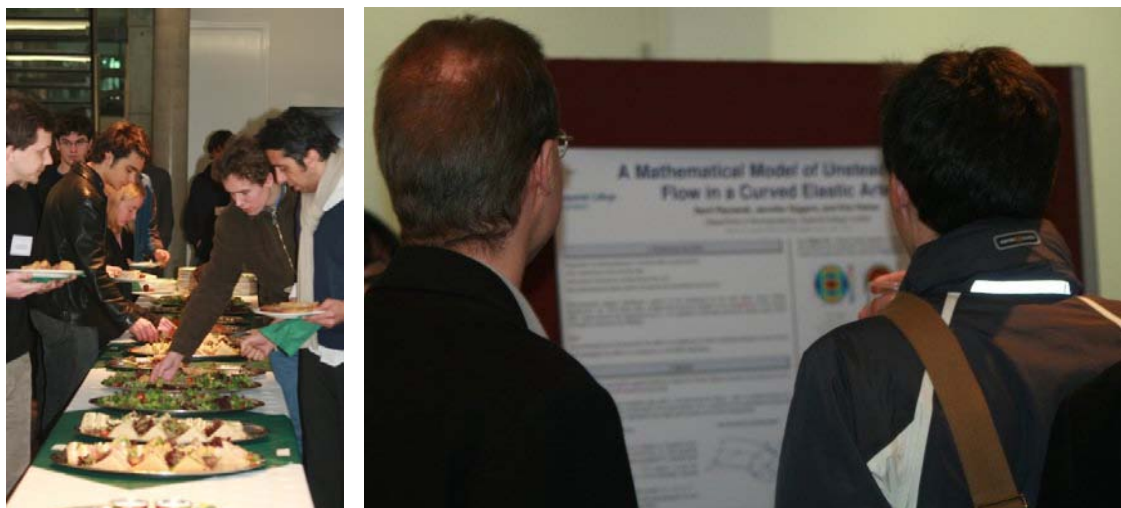Figure 3: Left: discussions during coffee break. Right: conference dinner.

Figure 4: Lunch and poster competition

Figure 5: Frank Berkshire's talk to kick off "Gambler's Ruin"

3   Gambler's Ruin

The final event of the year took place on the evening of 9 May 2010 and was entitled "Gambler's Ruin". Dr Frank Berkshire from Imperial College London, an expert in the field, gave an entertaining talk on the mathematics of gambling. After introducing the most common games in casinos he explained the respective odds for gamblers and shared some ideas on strategies. At the end of his lecture, Dr Berkshire outlined some of his own work on fake dice (geometrically imperfect dice) and amazed the audience with a demonstration showing that card shuffling does not automatically lead to a randomized stack of cards.

Afterwards around 50 keen gamblers had the chance to play roulette, craps, poker and black jack and put the newly acquired knowledge into practice while enjoying refreshments. Casino equipment and croupiers (in black tie) were provided by the Oxford RAG Casino, a student run charity organisation.

The guest of honour of the day was the new treasurer/secretary of the UK/Ireland Section of SIAM, Dr Timo Betcke (Reading). Dr Betcke is very supportive of the idea of Student Chapters and the Chapter hopes for a fruitul collaboration in the future.

Figure 6: Black jack and roulette tables.

Figure 7: Left: busy times at the poker table. Right: committee and Frank Berkshire

4 Outlook

Planned events for the university year 2010/2011 include a drinks reception, the annual conference, a field trip, a workshop on mathematics in finance, and a mathematical pub quiz. A new development is the incorporation of the Junior Applied Mathematics Seminar (JAMS) in the Chapter. JAMS (started in 1992) is a biweekly seminar series, where only graduate students present and faculty members are asked to be seen but not heard.

The new committee for 2010/2011 includes people from all four major applied maths groups in Oxford (OCIAM, OCCAM, Numerical Analysis, Center for Mathematical Biology):

Faculty Advisor	Mason Porter (porter@maths.ox.ac.uk)
President	Hermes Gadelhâ (gadelha@maths.ox.ac.uk)
Vice-President	Amy Smith (smitha2@maths.ox.ac.uk)
Secretary	Chris Lustri (lustri@maths.ox.ac.uk)
Treasurer	Almut Eisenträger (eisentraeger@maths.ox.ac.uk)
JAMS Representative	Ornella Cominetti (cominetti@maths.ox.ac.uk)
IT Officer	Aaron Smith (aaron.smith@dtc.ox.ac.uk)
Undergrad Representative	Robin Thompson (robin.thompson@worc.ox.ac.uk)

The Chapter is committed to taking and active role in spreading the idea of Student Chapters in the UK by forming and strengthening links with existing ones and providing help and support to students thinking about founding new ones.