

DR. ROBERT HEFFERNAN

Department of Mathematics and Statistics, KFUPM, Dhahran, Saudi Arabia

heffernan@kfupm.edu.sa

Education

- **University College Cork—Ireland**
Ph.D. in Finite Group Theory
 - September 2006 – September 2009.
 - Title of thesis: *Topics in Computer Assisted Finite Group Theory*.
 - Supervisor: Prof. Des MacHale, UCC.
- **University College Cork—Ireland**
M.Sc. by research in Finite Group Theory
 - September 2005 – August 2006.
 - Title: *Computational and Numerical Aspects of Finite Group Theory*.
 - Supervisor: Prof. Des MacHale, UCC.
- **University College Cork—Ireland**
B.Sc. in Computer Science and in Mathematics
 - October 2001 – June 2005.
 - Joint-honours degree including both Computer Science and Mathematics.
 - Graduation Date: September 2005 with second class honours grade 1.
 - Included as part of the assessment was an undergraduate thesis in mathematics supervised by Prof. Patrick Fitzpatrick concerning quasi-cyclic error correcting codes, awarded a grade of first-class honours.
 - Received a grade of first-class honours in my first-year exams earning the title of *College Scholar*.

Employment

- **Department of Mathematics and Statistics—KFUPM, Saudi Arabia**
Assistant Professor
 - October 2009 – Present
- **Department of Mathematics and Statistics—UCC, Cork, Ireland**
Part-time temporary lecturer
 - September 2006 – August 2009
- **Cork Constraint Computation Centre—UCC, Cork, Ireland**
Research Assistant
 - July 2001 – December 2005
- **TMC—Cork, Ireland**
Programmer
 - September 2000 – May 2001

Teaching Experience

- **Dept. of Mathematics and Statistics—KFUPM, Saudi Arabia**
Assistant Professor
 - Academic year of 2010/2011: *MATH260 (Introduction to Differential Equations & Linear Algebra)*, *MATH232 (Introduction to Sets and Structures)* and *MATH202 (Elements of Differential Equations)*.
 - Academic year of 2009/2010: *MATH201 (Multivariable Calculus)* and *MATH132 (Applications of Calculus)*.
 - Duties including: preparation and delivery of lectures, setting and marking of quizzes and exams.
 - Course coordinator of multi-section course *MATH260* during Semester I of 2010.
 - Supervised an undergraduate project for the course *Math490 (Seminar in Mathematics)*. This included helping a student prepare a short report and a 30 minute seminar.
- **Dept. of Mathematics, UCC—Cork, Ireland**
Part-time Assistant Lecturer
 - Academic year of 2006/2007: *MA3052 (Ring and Field Theory)*.
 - Academic years of 2007/2008 and 2008/2009: *MA1003 (Mathematical Methods and Calculus)*.
 - Duties including: preparation and delivery of lectures, preparation of tutorials, setting and marking of exams.
- **Dept. of Mathematics, UCC—Cork, Ireland**
Tutor
 - Academic years of 2005/2006 and 2006/2007.
 - Tutorials in the area of Discrete Mathematics to undergraduate Computer Science students.
- **Dept. of Computer Science, UCC—Cork, Ireland**
Lab Demonstrator
 - October 2002 – March 2003.
 - Assistant / tutor in Java programming labs.

Committees

- Member of the *Undergraduate* committee, KFUPM (academic year 2010/2011).
- Member of the *Information Technology* committee, KFUPM (academic year 2009/2010).

Research Grants / Funding

- In receipt of KFUPM *Junior Faculty Research Grant* (project #JF100011) entitled *Commutativity in compact topological groups*.

Research Interests

- Finite group theory and in particular questions relating to the theory of p -groups, questions relating to the theory of group automorphisms and questions relating to commutativity of finite groups.
- Ordinary representation theory of finite groups.
- More recently, compact topological groups and profinite groups in particular. I have recently been working on extending some results on commutativity in finite groups to this case.

Publications

- R. Heffernan, D. MacHale, Á. Ní Shé: *Restrictions on commutativity ratios in finite groups* (in preparation).
- R. Heffernan, D. MacHale, C. Roney-Dougal: *Soluble OCIC Groups* (in preparation).
- J. Curran, R. Heffernan and D. MacHale: *On the Order of the Automorphism Group of a Finite Group* in *Communications in Algebra* (to appear).
- E. C. Freuder, R. Heffernan, R. J. Wallace and N. Wilson: *Lexicographically-ordered Constraint Satisfaction Problems* in *Constraints*, 15 (1), 1383–7133 (2010).
- R. Heffernan and D. MacHale: *On the sum of the character degrees of a finite group* in *Mathematical Proceedings of the Royal Irish Academy*, 108A (1), 57–63 (2008).
- E. C. Freuder, R. Heffernan and R. J. Wallace: *Ordinal constraint satisfaction* in *The Proceedings of 5th International Workshop on Soft Constraints*, 2003.

Presentations

- *What is the probability that two elements of a (finite) group commute?*, Mathematics Seminar Feb 2010, KFUPM, KSA.
- *On the sum of character degrees of a finite group* at the Postgraduate Group Theory Conference 2007, Cambridge University, UK.
- *How big must $|G|$ be to ensure that G has an abelian subgroup of order at least n ?* (Poster), Groups in Galway 2006, NUI Galway, Ireland.
- Several presentations to the Postgraduate Mathematics Seminar, UCC, Ireland.
- Also: Presentations to the Dept. of Engineering and the Constraint Programming group in the Computer Science Dept. as an undergraduate student in UCC, Ireland.

Professional Affiliations

- Irish Mathematical Society
- American Mathematical Society

References

- Prof. Suliman Al-Homidan, Dean, College of Science, KFUPM, Saudi Arabia; homidan@kfupm.edu.sa
- Prof. Des MacHale, Department of Mathematics, UCC, Ireland; d.machale@ucc.ie
- Dr. Colva Roney-Dougal, Department of Mathematics, University of St. Andrews, Scotland; colva@mcs.st-and.ac.uk
- Dr. John Curran, Department of Mathematics and Statistics, University of Otago; jcurran@maths.otago.ac.nz