# Dr Kay Magaard

Reader in Algebra

**School of Mathematics (/schools/mathematics/index.aspx)**

## Contact details

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## About

Kay Magaard is a Reader in the School of Mathematics and currently serves as the director of the MSci programme and as Deputy Head of School.

He is an expert in the areas of group and representation theory and has published over 40 research papers. He frequently is a speaker at the national and international level and contributes to the postgraduate taught PhD programme delivered through the MAGIC consortium.

## Qualifications

- General Membership MSRI Berkeley, 2008 and 2001
- Rosenbaum Fellow Isaac Newton Intitute, 1997
- PhD in Mathematics, California Institute of Technology, 1990

## Biography

Since obtaining his PhD in 1990 Kay Magaard has worked on various aspects of group and representation theory. The questions he has worked on relate to various aspects of the maximal subgroup problem and can be phrased in terms of representation theory.

Another theme of Magaard's research relates to group actions on curves. The central theme here is how the braid-, and more generally the mapping class, groups act on Nielsen classes. Results concerning these actions have applications in number theory and geometry.

Related to the work on braid group actions is the question of constructive recognition of simple groups which has lead him to develop algorithms for the constructive recognition of exceptional groups of Lie type.

## Teaching

- Groups and Galois Theory
- Representation Theory
- Impact of Mathematics

## Postgraduate supervision

- Groups theory
- Representation theory, character values
- Group actions on curves

## Research

**RESEARCH THEMES**

- Group theory
- Representation theory
- Algorithms for computing with groups
- Applications to algebraic geometry and number theory

**RESEARCH ACTIVITY**

- Maximal subgroups of simple groups
- The action of the mapping class group on Nielsen classes
- Constructive recognition of exceptional groups of Lie type
- Representation theory of simple groups and unitriangular groups

## Publications


Himstedt, F.; Le, T.; Magaard, K.; Characters of the Sylow p-subgroups of the Chevalley groups $D_4(p^n)$, J. Algebra, 332 (2011), 414 -- 427

Magaard, K.; Shaska, T.; V\"olklein, H.; Genus 2 Curves that Admit a Degree 5 Map to an Elliptic Curve, Forum Math. 21 (2009), no. 3, 547--566.

Lübeck, F.; Magaard, K.; O'Brien, E.; Constructive recognition of $SL_3(q)$, J. Algebra (2007)

Magaard, K.; Völklein, H.; On Weierstrass points of Hurwitz curves. J. Algebra 300 (2006), no. 2, 647--654.

Magaard, K.; Shpectorov, S.; Völklein, H.; A GAP Package for Braid Orbit Computation and Applications, Experimental Mathematics 12:4, (2004) 385--394.

Gluck, D.; Magaard, K.; Riese, U.; Schimd, P.; The solution of the $k(GV)$ problem, J. Algebra, 279 (2004), 694--719.

Guralnick, R. M.; Magaard, K.; Saxl, J.; Tiep, P. H.; Cross characteristic representations of symplectic and unitary groups. J. Algebra 257 (2002), no. 2, 291--347.

Frohardt, D.; Magaard, K.; Composition Factors of Monodromy Groups, Annals of Mathematics, 154 (2001).