

# Rhona Maclean

## *Personal Details*

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## *Employment*

### **2006 - present: Postdoctoral Research Assistant**

I am currently working at Armagh Observatory, supervised by Prof. J. G. Doyle. My research focuses on the magnetic structure of bright points in the solar corona, coronal dimming regions, the influence of the magnetic carpet, and the magnetic nature of global field reversal due to the sunspot cycle.

## *Education*

<b>2003 - 2006:</b>	<b>PhD</b>	Theoretical Astrophysics, University of St Andrews Supervisor: Prof. E. R. Priest, F. R. S. Thesis title: Topological Structure of the Magnetic Solar Corona
<b>1999 - 2003:</b>	<b>MPhys</b>	Mathematics and Physics, University of Warwick Project supervisor: Dr. V. Nakariakov Project title: Temporal Variability of EUV Emissions of the Sun
<b>1985 - 1999:</b>	<b>Scottish Highers</b>	'A' grades in English, Mathematics, Physics, Chemistry, Biology Mary Erskine School, Edinburgh

## *Research Interests*

- topological modelling of the solar coronal magnetic field
- the magnetic field structure of coronal bright points
- topological models for the onset of solar flares, especially the magnetic breakout model
- the structure and evolution of the global coronal field throughout the sunspot cycle

## *International Research Visits*

**Montana State University, MT, USA** - June-July 2004 and 2005

- 6 weeks on each visit with Dr. Dana Longcope and Dr. Colin Beveridge
- worked on global topology of solar corona and effects of magnetic carpet on coronal connectivity

**Max Planck Institute for Solar System Research, Lindau, Germany** - November 2004

- 1 week with Dr. Jörg Büchner
- worked on the relationship between coronal heating and reconnection at topological features

## *Conferences Organised*

**UKMHD 2006**, University of St Andrews, June 2006

- member of Local Organising Committee
- responsible for conference dinner

## *Teaching Experience*

- certificate in "Introduction to Tutoring and Assessment"
- 6 semesters tutoring core modules in first year undergraduate mathematics
- 2 hours per week student contact time plus preparation and marking

### ***Recent Seminars and Conference Presentations***

<b>seminar</b>	MSSL, Surrey	Dec 2006	"A Topological View of 3D Global Magnetic Field Reversal in the Solar Corona"
<b>Magnetic Reconnection Workshop UKMHD</b>	Florence, Italy	Aug 2006	"Magnetic Topology and Reconnection, with Applications to a Coronal Bright Point"
<b>MIST/UKSP</b>	St Andrews	June 2006	"Predicting the Location of 3D Reconnection Sites in the Solar Atmosphere with Magnetic Topology"
<b>UK Solar Missions Forum UKMHD</b>	Aberystwyth	April 2006	"Topological Building Blocks for Global Magnetic Field Reconstructions"
<b>UK Solar Missions Forum UKMHD</b>	London	Feb 2006	"Magnetic Topology: An Essential Tool for Understanding Magnetic Field Data"
<b>UKMHD</b>	Exeter	May 2005	"Global Magnetic Topology of the Solar Corona"
<b>Robert Cormack Meeting</b>	St Andrews	May 2005	"Magnetic Topology of the Solar Corona"
<b>NAM/UKSP</b>	Birmingham	April 2005	poster: "Coronal Topological States in a Spherical Geometry"
<b>PROM</b>	St Andrews	Sept 2004	"A Topological Analysis of the Magnetic Breakout Model for the Onset of a CME"

### ***PPARC Summer Schools in Solar Physics***

During my PhD, I attended two Advanced summer schools (at Leeds and MSSL) and one Introductory summer school (at Sheffield). I gave presentations at both Advanced summer schools, and at MSSL, I won the prize for **best student presentation** for my work on 'Magnetic Breakout in Flares and CMEs: A Topological Approach'.

### ***Work Experience***

Summer 2002: **Work Canada**, Vancouver, BC, Canada

skills gained: independence, understanding of different cultures, self-reliance

Summer 2000: **Clinton Cards**, Edinburgh, Scotland

skills gained: customer service, money handling, stocktaking

Summer 1999: **Shad Valley summer school**, Fredericton, NB, Canada

**Royal Bank of Scotland**, Edinburgh, Scotland

skills gained: entrepreneurship, working in a team, meeting deadlines

### ***Membership of Professional Organisations***

- Fellow of the Royal Astronomical Society
- Associate Member of the Institute of Physics

### ***Computer Skills***

- Linux and MS Windows: several years' user experience
- IDL, Maple, Fortran 90, HTML and  $\LaTeX$ : good programming skills
- touch-typing certificate: 30 words per minute

### ***Other Interests and Achievements***

- treasurer of university hillwalking society in St Andrews: planned, organised, and lead hikes every second weekend; responsibility for club finances
- full clean driving licence for over 6 years
- good conversational Spanish; beginner level German and Italian
- snowboarding, salsa dance, tennis, reading, astronomy

## ***Publications***

- “Coronal Magnetic Topologies in a Spherical Geometry - II. Four Balanced Flux Sources”,  
R. C. Maclean, C. Beveridge, and E. R. Priest,  
*Solar Physics*, **238**, 13–27, doi:10.1007/s11207-006-0179-1
- “Understanding Magnetic Structure in the Solar Corona through Topological Analysis”,  
R. C. Maclean, C. E. Parnell, I. De Moortel, J. Büchner, and E. R. Priest,  
*Proceedings of the SOHO 17 Workshop: 10 Years of SOHO and Beyond*
- “Coronal Magnetic Topologies in a Spherical Geometry - I. Two Bipolar Flux Sources”,  
R. C. Maclean, C. Beveridge, G. Hornig, and E. R. Priest,  
*Solar Physics*, **235**, 259–280, doi:10.1007/s11207-006-0015-7
- “A Topological Analysis of the Magnetic Breakout Model for an Eruptive Solar Flare”,  
R. C. Maclean, C. Beveridge, D. W. Longcope, D. S. Brown, and E. R. Priest,  
*Proc. Roy. Soc. A*, **461**, 2099–2120, doi:10.1098/rspa.2005.1448
- “A Topological Analysis of the Magnetic Breakout Model for an Eruptive Solar Flare”,  
R. C. Maclean, C. Beveridge, D. W. Longcope, D. S. Brown, and E. R. Priest,  
*Proceedings of the SOHO 15 Workshop on Coronal Heating*