


*Undergraduate Degrees with
Integral Research Year
University of Surrey*



MPhys in Physics and Physics With...

Prof Paddy Regan

Dept. of Physics, FEPS

Rationale Behind 4-Year MPhys

- Extra ('M') level on 3 year BSc to prepare and inform students about realities of post-graduate research
- Provide academically better students chance to pursue undergrad studies to higher level.

Surrey Flavour 4-Year MPhys

- Years (levels) 1 and 2 identical to BSc stream
- For MPhys progression, student must achieve >60% at end of Autumn and Spring semesters in 1st year AND Autumn semester of 2nd year.
- Surrey-based courses to end of semester 5
- 1 year PAID research placement during semesters 6+7
- Students return in semester 8 (final semester of year 4) for 6 more courses

Breakdown of MPhys Grading

- Semesters 1+2
120 Level 1 Credits
- Semesters 3 + 4
30% for 12 modules at level 2
120 Level 2 credits
- Semesters 5 + 8
30% for 9 taught modules at level 3
120 Level 3 Credits
- Semesters 6+7 (RESEARCH YEAR) and Semester 8
- 30% for research year (thesis/oral/Visiting+Research Tutor reports)
- 10% for 3 taught modules in Semester 8
120 Level M Credits

The Research Year

- 1-year program making up 30% of final MPhys mark. Marks for dissertation, oral presentation and and visiting and research-supervisor reports.
- Option for in-house placements, **or more usual external, paid placements, often overseas.**
- Students visited 3 times by Surrey Visiting Tutor.
- Students write interim (~6 month) report and final Masters-level dissertation (50-100 pages).
- Marks also given for oral presentation and overall performance on Research Year.

• **MPhys Symposium - Wednesday 18th March 2009**

10.00am *Professor Paddy Regan MPhys Research Year Director* Welcome

- **10.05am** *Mark Abilama Centronic Limited* ‘Commercial Applications of GEANT4 for Neutron Proportional Counters’
- **10.25am** *Christopher Allwork AWE* ‘Activation of materials by protons emitted in laser plasma interactions’
- **10.45am** *Michael Bunce WNSL, Yale University* ‘Lifetime Measurements of the 2⁺ 1st excited state of ¹⁸⁰O_s and ¹⁷²Hf’
- **11.05am** *Hannah Dare TRIUMF, Vancouver* ‘Adapting a Fortran code to determine the lifetime of excited states in Neon-19’
- **11.25am** *Paul Davies JINA, University of Notre Dame* ‘Study of the hindrance effect in sub-barrier fusion reactions’
- **11.45am** *Sebastian Galer National Physical Laboratory* ‘Industrial Calorimetry – Initial Design to Experimental Application’
- **12.05pm** *Tom Harle Youngstown State University, Ohio* ‘Investigations into the Depletion of ¹⁰⁸Ag using Bremsstrahlung’
- **12.25pm** *Edward Martin JINA, University of Notre Dame* ‘Modelling the concept of Fusion Hindrance in Carbon fusion’

12.50pm Informal buffet Lunch

- **2.00pm** *Timothy Pelham Oak Ridge National Laboratory* ‘Simulation of ⁷Be (d,t) ⁶Be with Fresco’
- **2.20pm** *Timothy Pickering RAL* ‘There’s more to the image than meets they eye; Characterisation of novel CMOS sensors’
- **2.40pm** *Annabel Rapinett QINETIQ* ‘Zephyr-A high Altitude long endurance unmanned air vehicle’
- **3.00pm** *Jason Rawlings RAL* ‘Infra-red detector and radiometry development for the EarthCARE Broad-Band Radiometer’

3.20 Tea Break

- **3.45** *Timothy Ross University of Richmond, Virginia, USA* ‘Neutron damage tests of a highly segmented Ge detector’
- **4.05** *Laurent Sam Phillips, Eindhoven, Holland* ‘Transparent Electrical Contacts for 980nm VCSELs’
- **4.25** *Leigh Shermer UT Dallas, USA* ‘Investigating ultra-centrifugation of carbon nanotube suspensions to produce solid state materials (buckypaper)’
- **4.45** *Maria Spyrou ATI, University of Surrey* ‘The Diffusion Coefficient of Water by Neutron Scattering’

5.05 *Professor Paddy Regan*

Concluding Remarks

Placements (2000 -2005)

- Overseas (through Physics Dept. Research links)
 - USA: Yale (2), Notre Dame (5), North Carolina (1), Duke (1), Michigan State (1) , Kentucky (4), Lawrence Berkeley Lab (1), Florida State (4).
 - Canada: TRIUMF Lab (3), Simon Fraser Uni (1) .
 - Europe: CERN (6) & PSI (1) (Swiss), GSI-Germ. (2)
- UK (through longstanding BSc placement links)
 - National Physical Lab, Police Scientific Development Branch, Surrey Satellite Technology, Southampton Oceanography, Agilent Technologies, HMS Sultan, Rutherford Appleton Lab, Mullard Space Centre....

Scientific Publications by Surrey MPhys Placement Students

More than 65 peer-reviewed papers published with Surrey MPhys co-authors on Research Year between 1998 and 2005 including a number of leading author publications :

H. Newman et al. Physical Review **C64** (2001) 027304

M. Wiescher, V. Barnard et al., Eur. Phys. Jour. **A15** (2002) p59

M. Wiedeking et al., Phys. Rev. **C67** (2003) 034320

M. Redshaw and E. Myers, Phys. Rev. Lett. **88** (2002) 023002

J. Simpson, A. Pipidis et al., Phys. Rev. **C62** (2000) 024321

R O Hughes et al., Phys.Rev. **C69**(2004)051303

publications galore!

PHYSICAL REVIEW C, VOLUME 64, 027304

High-spin states in ^{203}Rn

H. Newman,^{1,2} J. R. Novak,¹ C. W. Beausang,¹ C. J. Barton,¹ M. A. Caprio,¹ R. F. Casten,¹ J. R. Cooper,¹ A. A. Hecht,¹
R. Krücken,¹ N. Pietralla,¹ A. Wolf,^{1,3,4} N. V. Zamfir,^{1,3} Jing-ye Zhang,^{1,5} K. E. Zyranski,¹ I. Birriel,⁶ and J. Saladin⁶

¹*Wright Nuclear Structure Laboratory, Yale University, New Haven, Connecticut 06520*

²*University of Surrey, Guildford, Surrey GU2 7XH, United Kingdom*

³*Clark University, Worcester, Massachusetts 01610*

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⁵*University of Tennessee, Knoxville, Tennessee 37996*

⁶*University of Pittsburgh, Pittsburgh, Pennsylvania 15260*

(Received 21 December 2000; published 13 July 2001)

The high-spin structure of ^{203}Rn has been investigated using two separate reactions. $\gamma-\gamma$ coincidences were measured for the $^{174}\text{Yb}(^{34}\text{S},5n)$ reaction at a beam energy of 167 MeV using the YRAST Ball array at the Wright Nuclear Structure Laboratory at Yale University. The $^{168}\text{Er}(^{40}\text{Ar},5n)$ reaction at an energy of 188 MeV was also employed. In this experiment γ rays were observed using the Gammasphere array in coincidence with the fragment mass analyzer at Argonne National Laboratory. The level scheme of ^{203}Rn has been developed to spins of $\sim 41/2\hbar$ and excitation energies of ~ 3 MeV. The high-spin decay is dominated by three sequences of γ rays, and the possible configurations are discussed.

DOI: 10.1103/PhysRevC.64.027304

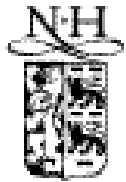
PACS number(s): 23.20.Lv, 25.70.Gh, 27.80.+w

Heather's Extra Result at Yale

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Note, in-house students also publish papers!



ELSEVIER

Nuclear Instruments and Methods in Physics Research A 483 (2002) 758–763

**NUCLEAR
INSTRUMENTS
& METHODS
IN PHYSICS
RESEARCH**

Section A

www.elsevier.com/locate/nima

In-beam performance of CdZnTe detectors for proton and alpha-particle measurement

S.M. Vincent*, P.H. Regan, K.E. Owen, C.J. Pearson, A.S. Clough

Department of Physics, University of Surrey, Guildford, GU2 7XH, UK

Received 2 January 2001; received in revised form 24 July 2001; accepted 1 August 2001

Keri Owen now works as a clinical medical physicist.

Where do they go post-graduation?

- Return to placement for PhD studies
- PhD studies back at Surrey (Physics, EE)
- PhD studies elsewhere in the UK/Europe
- Industry/employment
- Start family

Surrey@Florida State University

Gamma Gang
Florida State University
July 26, 2001



Summary

- Four-year, research flavoured MPhys courses now well established at Surrey
 - Physics (P)
 - Physics with Nuclear Astrophysics (PNA)
 - Physics with Satellite Technology (PST)
 - Physics with Finance (PF)
- Overseas placements appear to make this a ‘win-win-win’ product which attracts excellent quality students.
- For detail see Clough and Regan, *European Journal of Physics*, 24 (2003) 321-328

MPhys Graduates

