

## NATURAL SCIENCES TRIPOS, PART III (continued)

MICHAELMAS 2008

LENT 2009

EASTER 2009

## EXPERIMENTAL AND THEORETICAL PHYSICS

Departmental Contact: Dr Padman (email: III-physics@phy.cam.ac.uk)  
 Course Website: www.phy.cam.ac.uk/teaching/

Students must offer 3 courses from **Major Options**, together with 3 courses from **Minor Options**. **Quantum Field Theory** may be substituted for one **Major Option**. Courses from **Interdisciplinary Topics**, **Nuclear Power Engineering** and **Further Work** may each be substituted for one **Minor Option**. **Advanced Quantum Field Theory** may be substituted for two **Minor Options**.

The courses from the **Major Options** and **Minor Options**, **Nuclear Power Engineering** and **Quantum Field Theory** are examined at the start of the term following that in which they are given. **Advanced Quantum Field Theory** and courses from the **Interdisciplinary Topics** will be examined in June. The Entrepreneurship course from **Further Work** is continually assessed.

All students are recommended to attend the **Non-examinable courses**.

The course will begin with a meeting on the first Wednesday of Full Term (8 Oct.) at 12.30 p.m. in the *Small Lecture Theatre*.

Lectures are given at the *Cavendish Laboratory (West Cambridge)* unless otherwise stated.

The lecture rooms are indicated as follows:

(P) *Pippard Lecture Theatre*, (S) *Small Lecture Theatre*, (M) *Mott Seminar Room*.

All Part III Mathematics courses are given in the *Centre for Mathematical Sciences, Clarkson Road* in the rooms indicated in parentheses.

**Major Options**

PROF. H. SIRRINGHAUS (*P*)  
 Advanced Quantum Condensed Matter Physics. T. Th. S. 11

PROF. U. STEINER (*S*)  
 Soft Matter. Tu. Th. S. 10

DR P. ALEXANDER, PROF. A. C. FABIAN AND PROF. A. N. LASENBY (*S*)  
 Astrophysics and Cosmology. M. W. F. 9

PROF. M. A. THOMSON (*S*)  
 Particle Physics. M. W. F. 11

DR K. F. PRIESTLEY, PROF. D. MCKENZIE AND DR A. DEUSS (*S*)  
 Physics of the Earth as a Planet. M. W. F. 10

PROF. P. B. LITTLEWOOD (*S*)  
 Quantum Condensed Matter Field Theory. Tu. Th. S. 12

DR M. K. KÖHL AND DR Z. HADZIBABIC (*S*)  
 Atomic and Optical Physics. M. W. F. 12

**Minor Options**

Twelve-lecture courses beginning in the second week of term.

DR J. R. BATLEY (*S*)  
 Gauge Field Theory. Tu. Th. 9 (beginning 22 Jan.)

PROF. D. J. C. MACKAY (*P*)  
 Information Theory, Pattern Recognition and Neural Networks. M. W. 2 (beginning 26 Jan.)

DR C. G. LESTER (*S*)  
 The Frontiers of Particle Physics. M. F. 9 (beginning 23 Jan.)

DR J. COLE (*M*)  
 The Frontiers of Experimental Condensed Matter Physics. M. F. 9 (beginning 23 Jan.)

PROF. G. G. LONZARICH (*M*)  
 Superconductivity and Quantum Coherence. T. Th. 11 (beginning 22 Jan.)

DR C. H. W. BARNES (*S*)  
 Quantum Information. M. F. 10 (beginning 23 Jan.)

PROF. B. D. SIMONS (*M*)  
 Phase Transitions and Collective Phenomena. Tu. Th. 12 (beginning 22 Jan.)

DR R. D. E. SAUNDERS (*S*)  
 The Frontiers of Observational Astrophysics. W. F. 11 (beginning 23 Jan.)

DR R. E. ANSORGE AND OTHERS (*S*)  
 Medical Physics. Tu. Th. 2 (beginning 22 Jan.)

DR J. GUCK (*S*)  
 Biological Physics. M. W. 12 (beginning 26 Jan.)

DR C. J. B. FORD (*M*)  
 The Physics of Nanoelectronic Systems. M. W. 10 (beginning 26 Jan.)

DR M. P. HOBSON (*S*)  
 General Relativity. Tu. Th. 10 (beginning 22 Jan.)

**Quantum Field Theory**

The following course from Part III Mathematics (p. 143) may be offered for examination.

PROF. A. C. DAVIS  
 Quantum Field Theory. Tu. Th. S. 9 (CMS MR2)

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<b>Advanced Quantum Field Theory</b>	<p>The following course from Part III Mathematics (p. 144) may be offered for examination in place of <b>two</b> minor options.</p> <p>PROF. N. DOREY Advanced Quantum Field Theory. Tu. Th. S. 11 (CMS MR3)</p>	
<b>Nuclear Power Engineering</b>	<p>The following course from Part IIB Engineering (p. 128) may be offered for examination in place of <b>one</b> minor option.</p> <p>DR G. T. PARKS (<i>venue to be confirmed</i>) Nuclear Power Engineering. M. 12, W. 9 (beginning 19 Jan.)</p>	
<b>Interdisciplinary Topics</b>	<p>PROF. D. J. C. MACKAY AND OTHERS (<i>S</i>) Materials, Electronics and Renewable Energy. (Interdisciplinary course). Tu. Th. 12.15 (beginning 22 Jan.)</p> <p>DR M. HERZOG AND OTHERS (<i>Tilley LT</i>) Climate Change. (Interdisciplinary course). Tu. Th. 10 (beginning 22 Jan.)</p> <p>PROF. R. L. JONES AND OTHERS (<i>venue to be confirmed</i>) Atmospheric Chemistry and Global Change. (Interdisciplinary course). Tu. Th. 9 (beginning 22 Jan.)</p>	
<b>Examples Classes</b>		<p>DR J. R. BATLEY AND OTHERS (<i>P</i>) Examples Classes in General Physics. Tu. F. 2-4 (Nine classes, beginning 24 Apr., no class on 8 May)</p>
<p><b>Non-examinable courses</b> THE STAFF OF THE CAVENDISH LABORATORY Postgraduate Research Opportunities at the Cavendish. Reception on Th. 20 Nov. at 1 p.m. in the Foyer of the Pippard Lecture Theatre. Exhibition from 17 Nov. to 28 Nov.</p>	<p>DR J. N. BUTTERFIELD (<i>S</i>) Philosophy of Physics. F. 12 (Four lectures beginning 16 Jan.)</p> <p>DR R. C. JENNINGS (<i>S</i>) Ethics of Physics. F. 12 (Four lectures beginning 13 Feb.)</p> <p>THE STAFF OF THE CAVENDISH LABORATORY Current Research Work in the Cavendish Laboratory. Open Days for students reading Part II or Part III Physics W. 2-5 The Open Days will start with introductory talks at 2 p.m. in the <i>Cavendish Laboratory</i> Research in the <i>TCM Group</i> (4 Feb. 2.15 in <i>TCM Seminar Room</i>)</p>	
<p>PROF. P. B. LITTLEWOOD AND OTHERS Cavendish Physical Society seminars. W. 4.15 (Alternate weeks beginning 15 Oct.)</p>	<p>PROF. P. B. LITTLEWOOD AND OTHERS The same continued.</p>	<p>PROF. P. B. LITTLEWOOD AND OTHERS The same continued.</p>
<p><b>Further Work</b> DR D. F. BUSCHER Long Vacation Project.</p>	<p>DR S. VYAKARNAM AND OTHERS (<i>Mill Lane Lecture Theatre 6</i>) Entrepreneurship. M. Th. 4 (beginning 19 Jan.)</p>	
<p><b>Project Work</b> DR R. PADMAN AND OTHERS Project Work.</p>	<p>DR R. PADMAN AND OTHERS The same continued.</p>	<p>DR R. PADMAN AND OTHERS The same continued.</p>