



universität**bonn**

Universität zu Köln



Bonn-Cologne Graduate School
of Physics and Astronomy

Course Overview

Winter Term 2008/2009



bcgs



A BCGS Course Overview?

The following list of courses provides an overview of lectures and seminars in the Master's programmes in Bonn and Cologne.

All listed courses are suitable for BCGS students.

For convenience, the courses are classified according to the three main research areas covered by the Graduate School. Further, you will find courses of general interest as well as special BCGS courses.

We highly recommend to take part in courses associated with your main field of interest even if you have already started working on your Master, Diploma or Ph.D. thesis. Especially offers from the respective partner university may prove highly valuable.

Contents

Special BCGS Courses.....	3
General Courses.....	4
Particle and Nuclear Physics.....	5
Astronomy and Astrophysics.....	6
Condensed Matter and Statistical Physics, Photonics.....	9
Spring Intensive Course.....	12
Presentation of Research Groups.....	13
Science meets Business.....	14
Welcome Meeting.....	15

List of Abbreviations

Institutes in Bonn

- PI - Physikalisches Institut
Nussallee 12, 53115 Bonn
- HISKP - Helmholtz - Institut für Strahlen- und Kernphysik
Nussallee 14-16, 53115 Bonn
- IAP - Institut für Angewandte Physik
Wegelerstr.8, 53115 Bonn
- AlfA - Argelander-Institut für Astronomie
Auf dem Hügel 71, 53121 Bonn

- MPIfR - Max-Planck-Institut für Radioastronomie
Auf dem Hügel 69, 53121 Bonn

Institutes in Cologne

- I. PI - I. Physikalisches Institut
 - II. PI - II. Physikalisches Institut
 - IKP - Institut für Kernphysik
 - THP - Institut für Theoretische Physik
- Zülpicher Str. 77, 50937 Köln

Rooms

- SR - Seminar Room
- CR - Conference Room
- KOSMA - KOSMA Room
- Lib - Library
- LH - Lecture Hall



Video Conference

BCGS Courses

Lectures

physics611	Particle Physics Tu 12-14, Th 8-10, LH, IAP, Bonn including 1 hr exercises in groups The same lecture is given in Cologne: Mo 16-17.30, LH III, We 8-9.30, SR IKP	<i>J. Kroseberg, U. Thoma</i>
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physics618	Physics of Particle Detectors Tu 10-12, Th 14-16, SR I, HISKP, Bonn including 1 hr exercises in groups The lecture is broadcasted to Cologne: Tu 10-12, SR II. PI, Th 14-16, KOSMA I. PI	<i>V. Büscher, E. von Törne</i>
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Research Internships

Students become a temporary member of a research group for a typical duration of four weeks,
Further information: <http://www.gradschool.physics.uni-bonn.de>,
for similar courses, see:

physics717	High Energy Physics Lab , Bonn 4 to 6 weeks on agreement	<i>E. von Törne</i>
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physics732	Optics Lab , Bonn 4 to 6 weeks on agreement	<i>K. Buse, M. Fiebig, D. Meschede, F. Vewinger, M. Weitz</i>
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6186	Miniforschung (Ferienarbeit für Studierende mittlerer Semester) , Cologne	<i>Professors and Lecturers of the Physics' Institutes</i>
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Intensive Course

6857	Spring Intensive Course: Understanding and Building a Quantum Communication Link , Bonn, 1 week, Monday to Saturday, morning and afternoon, see page 12	<i>D. Meschede, W. Alt, F. Vewinger, A. Widera</i>
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Presentation of Research Groups

Presentation of Research Groups , We 12-13.30, biweekly, LH II, Cologne, first event: 22/10/08, see page 13	<i>contact: R. Bulla</i>
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General Courses

physics601	Advanced Laboratory Course 3+2 hrs in groups, Bonn	<i>R. Beck, U. Blum, S. Goertz, K. Peithmann</i>
physics606	Advanced Quantum Theory Mo 11-13, Fr 12, LH I, PI, Bonn Exercises: 2 hrs in groups	<i>H. Dreiner</i>
physics754	General Relativity and Cosmology Tu 12, Th 14-16, LH I, PI, Bonn Exercises: 2 hrs in groups	<i>S. Förste</i>
6150	Theoretische Physik in zwei Semestern II (Theoretische Physik: Struktur der Materie) 4 hrs Mo 12-13.30, Tu 8-9.30, LH III, Cologne Exercises: 2 hrs Mo 8-9.30, LH III, Cologne	<i>R. Klesse</i>
6154	Advanced Quantum Mechanics 4 hrs Mo, Tu 10-11.30, SR THP, Exercises: 2 hrs We 16-17.30, SR II. PI, Cologne	<i>C. Kiefer</i>

Particle and Nuclear Physics

physics607	Advanced Theoretical Physics We 10-12, Th 13, SR II, HISKP, Bonn Exercises: 2 hrs in groups	<i>U. Meißner, A. Rusetsky</i>
physics612	Accelerator Physics We 12, Th 10-12, SR I, HISKP, Bonn Lecture on Th, 16.10.08 will take place 10-12 in LH, HISKP Exercises: 1 hr in groups	<i>W. Hillert, R. Maier</i>
physics615	Theoretical Particle Physics Tu 14-16, Th 12, LH I, PI, Bonn Exercises: 2 hrs in groups	<i>M. Drees</i>
physics616	Theoretical Hadron Physics Mo 9-11, Tu 9, LH, HISKP, Bonn Exercises: 2 hrs in groups	<i>B. Metsch</i>
physics715	Experiments on the Structure of Hadrons Mo 11-13, SR I, HISKP, Bonn Exercises: 1 hr in groups	<i>K.-T. Brinkmann</i>
physics716	Statistical Methods of Data Analysis We 14-16, LH, IAP, Bonn Exercises: 1 hr in groups	<i>J. Pretz</i>
physics752	Superstring Theory We 10-12, LH, HISKP, Fr 13, LH I, PI, Bonn Exercises: 2 hrs in groups	<i>H.-P. Nilles</i>
physics757	Effective Field Theories for Nuclear and Particle Physics We 14-17, SR I, HISKP, Bonn Exercises: 2 hrs in groups	<i>C. Hanhart, A. Wirzba</i>
physics758	Quantum Chromodynamics Mo 14-16, We 9, SR I, HISKP, Bonn Exercises: 2 hrs in groups	<i>H.-W. Hammer</i>

Particle and Nuclear Physics

6151	Nuclear Physics II (nuclear structure and reactions) 3 hrs Mo 14, We 16-17.30, SR IKP, Cologne	<i>P. Reiter</i>
6159	Hadron Physics 2 hrs on agreement, SR IKP, Cologne	<i>M. Büscher, D. Gotta, H. Ströher</i>
6202	Advanced Seminar on Nuclear Physics 2 hrs We 14-15.30, SR IKP, Cologne	<i>M. Büscher, D. Gotta, J. Jolie, A. Zilges, P. Reiter, H. Ströher, A. Dewald, K.O. Zell</i>
6207	Advanced Seminar on Heavy Ion Physics 2 hrs Fr 14-15.30, Lib IKP, Cologne	<i>P. Reiter</i>

Astronomy and Astrophysics

astro801	Introduction to astrophysics special announcement, with exercises, on agreement, Bonn	<i>F. Bertoldi, U. Klein, P. Schneider</i>
astro811	Stars and stellar evolution Th 9-11, Fr 9, LH Astronomy with exercises, on agreement, Bonn	<i>P. Kroupa, N.N.</i>
astro812	Cosmology Mo 16-19, LH 0.01, MPIfR with exercises, 1 hr, on agreement, Bonn	<i>P. Schneider</i>
astro841	Radio astronomy: tools, applications, and impacts Tu 16-17, Th 16-18, R. 1.11, Bonn Exercises: Mo 12-13, R. 1.11	<i>U. Klein</i>

astro842	Sub-mm astronomy We 10-12, LH 0.01, MPIfR, Bonn with exercises, on agreement	<i>K. Menten, F. Bertoldi</i>
astro843	Astronomical interferometry and digital image processing We 15.30-17, LH 0.02, MPIfR, Bonn	<i>G. Weigelt</i>
astro853	The physics of dense stellar systems Tu 10-12, R. 3.19 with exercises, on agreement, Bonn	<i>P. Kroupa</i>
astro854	Numerical gravitational dynamics Th 14-16, R. 3.19, Bonn	<i>H. Baumgardt, P. Kroupa</i>
astro855	Radio- and X-ray observations of dark matter and dark energy , Bonn Fr 13-15, R. 1.11	<i>J. Kerp, T. Reiprich</i>
astro856	Quasars and microquasars Th 9-10.30, R. 1.11, Bonn	<i>M. Massi</i>
astro857	Star formation Th 11-13, LH 0.01, MPIfR, Bonn	<i>P. Schilke, B. Parise</i>
astro891	Seminar on cosmology and selected problems in gravitational lensing research Tu 14-16, R. 3.19, Bonn	<i>P. Schneider u.M.</i>
astro892	Seminar on radio astronomy Th 14, R. 1.11, Bonn	<i>U. Klein, F. Bertoldi, J. Jorgensen, M. Massi, K. Menten, P. Schilke</i>
astro893	Seminar on star clusters and dwarf galaxies Fr 14-16, R. 3.19, Bonn	<i>H. Baumgardt, P. Kroupa</i>
astro894	Specialized seminars , Bonn	<i>Professors and Lecturers of Astronomy</i>
astro895	Seminar on theoretical dynamics Fr 9.30-11, R. 3.19, Bonn	<i>H. Baumgardt, P. Kroupa</i>

Astronomy and Astrophysics

astro896	Statistical methods in astrophysics Mo 11-13, R. 3.19, Bonn	<i>P. Schneider u.M.</i>
6152	Astrophysics II 4 hrs Tu 10-11.30, Th 12-13.30, SR I. PI, Cologne	<i>A. Eckart, C. Straubmeier, S. Pfalzner</i>
6161	Molecular Physics I 3 hrs Mo 10-11.30, Tu 12, 1 hr Tu 13 Problem Class, SR I. PI, Cologne	<i>T. Giesen, S. Schlemmer</i>
6169	Computational Astrophysics 3 hrs Mo 9.30-11 and on agreement, SR I. PI, Cologne 3 hrs practical course upon agreement	<i>S. Pfalzner</i>
6171	Atomphysik II 3 hrs We 10-11.30, Fr 12, SR I. PI, Cologne	<i>R. Schieder</i>
6173	Scientific space missions 2 hrs Th 10-11.30, SR IKP, Cologne	<i>V. Ossenkopf</i>
6199	Advanced Seminar on Current Problems in Physics and Astrophysics “Interstellar Medium and Diagnostics” 2 hrs Mo 16-17.30, SR I. PI, Cologne	<i>A. Eckart, R. Schieder, S. Schlemmer, J. Stutzki</i>
6200	Advanced Seminar on Current Problems in Theoretical Astrophysics 2 hrs Tu 9-10.30, SR I. PI, Cologne	<i>S. Pfalzner</i>
6208	Advanced Seminar on Relativity and Cosmology 2 hrs Tu 14-15.30, SR THP, Cologne	<i>C. Kiefer</i>

Condensed Matter and Statistical Physics, Photonics

physics613	Condensed Matter Physics We 8-10, Fr 9, LH, HISKP, Bonn Exercises: 1 hr in groups	<i>P.-D. Eversheim, R. Vianden</i>
physics614	Laser Physics and Quantum Optics Tu 9, Th 10-12, LH, IAP, Bonn Exercises: 1 hr in groups	<i>M. Fiebig</i>
physics619	Photonics Tu 8, Th 16-18, LH, IAP, Bonn Exercises: 1 hr in groups	<i>K. Buse, F. Vewinger</i>
physics617	Theoretical Condensed Matter Physics We 12, Fr 10-12, LH, HISKP, Bonn Exercises: 2 hrs in groups	<i>H. Monien</i>
physics756	Critical Phenomena Tu 10-12, Th 10, LH, HISKP, Bonn Lecture on Th, 16.10.08 will take place 9-10 in LH, HISKP Exercises: 2 hrs in groups	<i>J. Kroha</i>
physics771	Environmental Physics & Energy Physics Th 13:30-15, LH 118, AVZ I, Bonn (Endericher Allee 11-13)	<i>B. Diekmann</i>
physics772	Physics in Medicine I: Fundamentals of Analyzing Biomedical Signals Mo 9-11, Fr 9, SR I, HISKP, Bonn Exercises: 1 hr in groups	<i>K. Lehnertz</i>
6153	Solid State Physics II 4 hrs We & Fr 10-11.30, SR II. PI, Cologne	<i>M. Braden</i>

6158	Quantum Field Theory II 4 hrs Th 10-11.30, SR II. PI, Fr 10-11.30, SR THP, Cologne Exercises: 2 hrs Tu 16-17.30, SR IKP, Cologne	<i>A. Altland</i>
6160	Theoretical Biological Physics 2 hrs Mo 12-13.30, LH II, Cologne	<i>U. Gerland</i>
6163	Physics of Surfaces and Nanostructures 2 hrs We 10-11.30, LH III, Cologne	<i>T. Michely</i>
6164	Groups, Graphs and Spin Models 4 hrs We 14-15.30, Fr 12-13.30, CR THP, Cologne	<i>H. Moraal</i>
6165	Superconductivity 2 hrs Fr 12-13.30, SR II. PI, Cologne	<i>J. Mydosh</i>
6166	Fundamental Physics of Information and Nano-Technology 2 hrs Tu 14-15.30, SR II. PI, Cologne, first lecture: 21/10/08	<i>J. Mydosh, R. Wördenweber</i>
6167	Statistical Physics II 4 hrs Mo 10-11.30, LH II, We 10-11.30, SR IKP, Cologne Exercises: 2 hrs Tu 16-17.30, SR I. PI, Cologne	<i>T. Nattermann</i>
6168	Qualitative Methoden der theoretischen Physik 2 hrs Tu 12-13.30, LH III, Cologne	<i>T. Nattermann</i>
6170	Quantum Liquids 2 hrs Fr 14-15.30, SR II. PI, Cologne	<i>J. Röhler</i>
6172	Electronic Structure 2 hrs Mo 12-13.30, SR II. PI, Exercises: 1 hr Fr 12, SR IKP, Cologne	<i>L.H. Tjeng</i>

6174	<p>Solid State Theory I 3 h lectures and 1 h tutorials every second week Mo 10-11.30, SR IKP, Th 12-13.30, SR II. PI, Cologne</p>	<p><i>M. Vojta</i></p>
6175	<p>Physics of Biological Systems 4 hrs We 12-13.30 SR I. PI, Fr 12-13.30, SR II. PI, Cologne Exercises: 2 hrs on agreement</p>	<p><i>M. Lässig, R. Bundschuh</i></p>
6187	<p>Spintronics: From GMR to Quantum Information 40th IFF-Spring School, March, 9th-20th 2009 Will be held within the joined holiday course of the Institut für Festkörperforschung (IFF) of Forschungszentrum Jülich and the University of Cologne and announced separately. Lectures are given in English. see also: http://www.fz-juelich.de/iff/ferienschule</p>	<p><i>P.S. Bechthold, C. Buchal, D. E. Bürgler, G. Gompper, P. Grünberg, H. Kohlstedt, R. Wördenweber</i></p>
6201	<p>Advanced Seminar on Current Problems in Solid State Physics 2 hrs Mo 14-15.30, SR II. PI, Cologne</p>	<p><i>M. Abd-Elmeguid, M. Braden, M. Grüninger, T. Michely, J. Mydosh, L.H. Tjeng</i></p>
6211	<p>Advanced Seminar on Evolutionary Dynamics 2 hrs We 14-15.30, LH III, Cologne</p>	<p><i>A. Altland, U. Gerland, J. Krug, M. Lässig</i></p>
6215	<p>Seminar on Biological Physics 2 hrs Tu 14-15.30, SR THP, Cologne</p>	<p><i>U. Gerland, M. Lässig</i></p>

Spring Intensive Course: Understanding and Building a Quantum Link

The intensive course will convey the basics of quantum communication and quantum cryptography in theory and experiment. Guided by a combination of lectures as well as original publication based seminar talks and practical training, the participants will set up and operate a quantum communication line.

Detailed information and a course outline can be found at <http://www.iap.uni-bonn.de/IntensiveWeek.html>



Presentation of Research Groups

The Cologne research groups will be introduced in biweekly presentations. During one meeting, two Professors (and/or 'Privatdozenten') summarise their research in a talk. Discussions are encouraged.

The objective is to provide insight into the Physics Institutes and thus into Cologne research. The complete programme can be found at <http://www.physik.uni-koeln.de>

First dates:

22/10/2008, Presentations by Prof. A. Eckart and Prof. A. Rosch

05/11/2008, Presentations by Prof. J. Stutzki and Prof. J. Jolie

A similar event will be planned in Bonn.



Science meets Business

Within the lecture series “Science meets Business” physicists report on their working experiences in the Industry as well as career opportunities and new frontiers in industrial research. Usually, these events are scheduled once per term.

The next event will take place

October, 17th, starting 4.15 p.m.
Wolfgang-Paul-Hörsaal
Kreuzbergweg 28 in 53115 Bonn

Speaker: Dr. Torsten Bremer (ZF Boge Elastmetall GmbH)
“Physicists in the Industry: Opportunities and Challenges”

All interested students are cordially invited. Discussions are strongly encouraged.

Dr. Torsten Bremer has a Ph.D. in physics and is the CEO of the ZF Boge Elastmetall GmbH. This company counting 3000 employees worldwide runs a Center for Research and Development for automotive vibration technology in Bonn/Friesdorf.

Welcome meeting / Grand Opening

We invite all BCGS members to our welcome party for our new students. The festive event to open the new academic year will take place

November 14th, starting around 3.30 p.m.
Lecture Hall I (Georg-Simon Ohm Hörsaal)
Zülpicher Str. 77 in 50937 Cologne

Speaker: Prof. Malcolm Longair (University of Cambridge, UK)
“Cosmology for Physicists -
why Inflation has to be taken Really Seriously”

The lecture by Professor Longair is scheduled around 5 p.m., the complete programme will be presented on our webpage before long.

Special Lecture

On November 13th, Prof. Malcolm Longair will give an additional lecture on “James Clerk Maxwell - Scotland’s Greatest Physicist”. The lecture will take place at the WP-Hörsaal in Bonn at 5 p.m.

All interested students are cordially invited.



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