



universität**bonn**

Universität zu Köln



Bonn-Cologne Graduate School
of Physics and Astronomy

Course Overview

Winter Term 2010/2011



weekly schedule



Time frame for the coordinated studies programme at Bonn (B) and Cologne (C). The marked areas indicate scheduling of the most attractive courses for students from the partner institution. Fridays are reserved for early integration into research groups.

BCGS Course Overview

Winter Term 2010/2011

This list of courses provides an overview of lectures and seminars offered within the Master and Diploma course programmes in Bonn and Cologne.

Certain courses are assigned as “Special BCGS Courses” such as joined courses given by lecturers from both universities, courses broadcasted to the other university by video conference, courses given as teaching exchange between both universities, or (lab) courses facilitating “early-on-research”. Courses of special relevance for students of the partner university have been scheduled within the BCGS time frame enabling students to travel to the partner university (see adjacent figure).

Further, you will find courses classified according to the three main research areas covered by the Graduate School: Particle and Nuclear Physics - Astronomy and Astrophysics - Condensed Matter and Statistical Physics, Photonics.

You may choose your personal curriculum with respect to your scientific interests within the terms of the corresponding Master programmes in Bonn and Cologne. In case you need any support do not hesitate to ask your mentors or the administration.

Contents

Special BCGS Courses.....	3
General Courses.....	6
Particle and Nuclear Physics.....	6
Astronomy and Astrophysics.....	8
Condensed Matter and Statistical Physics, Photonics...	11

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
- Zùlpicher Str. 77, 50937 Köln

Rooms

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

Video Conference



Teaching Exchange



Joined Course





Special BCGS Courses

Lectures

physics611	Particle Physics Tu 14-16, Th 9, LH, IAP, Bonn Exercises: 1 hr in groups	<i>J. Dingfelder, N. Wermes</i>
physics614	Laser Physics and Nonlinear Optics Tu 8-10, Th 14-16, LH, IAP, Bonn Exercises: 1 hr in groups included	<i>K. Buse</i>
physics615 6197 	Theoretical Particle Physics Tu 16-18, Fr 12, LH, IAP, Bonn The lecture is broadcasted to Cologne: Lib IKP Exercises: 2 hrs in groups	<i>H.-P. Nilles</i>
physics618	Physics of Particle Detectors Tu 8-10, Tu 14, SR I, HISKP, Bonn Exercises: 1 hr in groups	<i>K.-T. Brinkmann</i>
physics619	Applied Photonics Tu 12, Th 10-12, LH, IAP, Bonn Exercises: 1 hr in groups	<i>S. Linden</i>
physics739 6187 	Ultracold Atoms and Many-Body Physics Tu 10-12, Th 12-14, in turn LH, IAP, Bonn, SR IKP, Cologne Exercises: 1 hr in groups included	<i>D. Meschede, A. Rosch</i>
astro812 6196 	Cosmology Mo 16-19, LH 0.01, MPIfR, Bonn Exercises: 1 hr in groups Lecture is broadcasted to Cologne: SR IKP	<i>P. Schneider, C. Porziani</i>
6184	Nuclear Physics II 3 hrs Mo 14-14.45, We 16-17.30, SR IKP, Cologne	<i>J. Jolie</i>
6185 	Quantum Gravity 2 hrs Mo 16-17.30, SR THP, Cologne Lecture is broadcasted to Bonn: SR I, PI	<i>C. Kiefer</i>

Special BCGS Courses

6186	The Early Universe 2 hrs We 10-11.30, SR THP, Cologne	<i>C. Kiefer</i>
6188	Physics of Surfaces and Nanostructures 2 hrs We 16-17.30, CR THP, Cologne	<i>T. Michely</i>
6192	 Solid State Theory 3 hrs Mo 12-13.30, We 12-13.30, SR THP, Cologne Exercises: 1 hr in groups every second week Lecture is broadcasted to Bonn: CR II, PI	<i>A. Rosch</i>
6194	 Molecular Physics I 3 hrs Mo 12-13.30, SR IKP, Tu 12, SR I. PI, 1 hr Tu 13 Problem Class, SR I. PI, Cologne Lecture is broadcasted to Bonn: CR, IAP	<i>S. Schlemmer</i>

Due to technical support issues, lectures by video might be shifted to other rooms on short notice.
Please check the BCGS web site and local announcements.

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-koeln.de>,
for similar courses, see

physics717	High Energy Physics Lab, Bonn 4 to 6 weeks on agreement	<i>E. von Törne</i>
physics732	Optics Lab, Bonn 4 to 6 weeks on agreement http://www.iap.uni-bonn.de/opticslab/	<i>K. Buse, M. Fiebig, D. Meschede, F. Vewinger, M. Weitz</i>
6198	Miniforschung (Internship during semester break for advanced students), Cologne	<i>Professors and Lecturers of the Physics Institutes</i>

Seminars

6234	Seminar on Applications of the Nuclear Shell Model (Continuation of Intensive Week) 2 hrs We 10-11.30, Lib IKP, Cologne	<i>A. Blazhev</i>
------	---	-------------------

Intensive Courses

physics719	BCGS Intensive Week on Detectors and Readout Electronics (Advanced Topics in High Energy Physics), Bonn 4.-8.10.2010 http://www.uni-bonn.de/~etoerne/teaching/intensive-week10/	<i>M. Barbero, F. Hüggling, A. Kruth, E. von Törne</i>
------------	--	--

physics737	BCGS Intensive Week: Advanced Topics in Photonics and Quantum Optics, Bonn 1 week, February/March 2011	<i>K. Buse</i>
------------	---	----------------

Presentation of Research Groups


Presentation of Research Groups
2 hrs Fr 12:13.30,
CR11, PI, Bonn and LH III, Cologne
(video conference)

*Professors and Lecturers
of the Physics Institutes;
contact: R. Bulla,
M. Wilhelm, E. von Törne*

Introduction to the research groups in Bonn and Cologne. The detailed programme will be available soon at
<http://www.physik.uni-koeln.de/195.html?&L=1>
First meeting: November 2010

Please note: The Bonn part of this seminar is a joint activity of Fachschaft Physik and BCGS.

General Courses

physics606	Advanced Quantum Theory Mo 11-13, Th 12, LH I, PI, Bonn Exercises: 2 hrs in groups	<i>B. Metsch</i>
physics607	Advanced Theoretical Physics Tu 10-12, SR I, HISKP, Th 16, SR II, HISKP, Bonn Exercises: 2 hrs in groups	<i>U. Meißner, A. Rusetsky</i>
physics760	Computational Physics Fr 14-16, SR I, HISKP, Bonn	<i>C. Urbach</i>
6173	Statistical Physics II 4 hrs Tu 14-15.30, We 10-11.30, LH III, Cologne Exercises: 2 hrs Mo on agreement	<i>T. Nattermann</i>
6174	Advanced Quantum Mechanics 4 hrs Mo 10-11.30, Tu 8-9.30, SR THP, Cologne Exercises: 2 hrs We on agreement	<i>M. Zirnbauer</i>
6193	Supersymmetry: Mathematical structure and physical applications 2 hrs We 14-15.30, CR THP, Cologne	<i>T. Quella</i>

Particle and Nuclear Physics

physics612	Accelerator Physics We 10-12, LH, IAP, Th 10-12, SR I, HISKP, Bonn Exercises: 1 hr included Lecture on Th, 14.10. will take place in LH, HISKP	<i>W. Hillert, A. Lehrach, R. Maier</i>
physics616	Theoretical Hadron Physics We 8-10, Th 15, SR I, HISKP, Bonn Exercises: 2 hrs in groups	<i>H.-W. Hammer</i>
physics711	Particle Astrophysics and Cosmology Tu 10-12, LH, HISKP, We 12, LH, IAP, Bonn Exercises: 1 hr in groups	<i>M. Kowalski</i>

physics715	Experiments on the Structure of Hadrons We 14-16, SR II, HISKP, Bonn Exercises: 1 hr in groups	<i>A. Gillitzer</i>
physics751	Group Theory We 10-13, LH, HISKP, Bonn Exercises: 2 hrs in groups	<i>A. Nogga, A. Wirzba</i>
physics752	Superstring Theory Mo 9-11, Tu 12, SR II, HISKP, Bonn Exercises: 2 hrs in groups	<i>S. Förste, A. Klemm</i>
physics761	Supersymmetry Mo 13, Th 13-15, LH I, PI, Bonn Exercises: 1 hr in groups	<i>H. Dreiner</i>
physics651	Seminar on Current Topics in Experimental Particle Physics Mo 11-13, room 300 PI, Bonn	<i>I. Brock, K. Desch, E. von Törne, N. Wermes</i>
physics657	Seminar on Topics in String Theory Fr 14-16, CR II, PI, Bonn	<i>S. Förste, A. Klemm</i>
6180	Tools for Particle Physics 2 hrs on agreement, SR IKP, Cologne First meeting: We, 13.10.2010 @ 12h	<i>M. Büscher, D. Gotta, S. Schadmand, H. Ströher</i>
6221	Advanced Seminar on Nuclear Physics 2 hrs We 14-15.30, SR IKP, Cologne	<i>M. Büscher, D. Gotta, J. Jolie, P. Reiter, A. Zilges, H. Ströher, A. Dewald, S. Schadmand, K.O. Zell</i>
6225	Advanced Seminar on Accelerator Mass Spectroscopy 2 hrs Fr 14-15.30, SR THP, Cologne First meeting: Fr, 15.10.2010 @ 14h	<i>A. Dewald</i>
6232	Advanced Seminar on Heavy Ion Physics 2 hrs Th 14-15.30, Lib IKP, Cologne First meeting: Th 14.10.2010 @ 14h	<i>P. Reiter</i>

Astronomy and Astrophysics

astro801	Introduction to astrophysics Details to be announced, Bonn Exercises arranged by appointment	<i>U. Klein</i>
astro811	Stars and stellar evolution Th 9-11, Fr 9, LH Astronomy, Bonn Exercises arranged by appointment	<i>N. Langer</i>
astro841	Radio astronomy: tools, applications, and impacts Tu 16, Th 16-18, LH Astronomy, Bonn Exercises: Mo 12, LH 0.05, Bonn	<i>U. Klein</i>
astro842	Submillimeter astronomy Th 11-13, LH 0.01, MPIfR, Bonn Exercises arranged by appointment	<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, Bonn Exercises arranged by appointment	<i>P. Kroupa</i>
astro854	Numerical gravitational dynamics Th 15-17, R. 3.19, Bonn Exercises arranged by appointment	<i>J. Pflamm-Altenburg</i>
astro855	Dark matter and dark energy explored by radio and X-ray observations Fr 13-15, LH 0.05, Bonn Exercises/lab course arranged by appointment	<i>J. Kerp, T. Reiprich</i>
astro856	Quasars and microquasars Th 9-10.30, LH 0.01, Bonn	<i>M. Massi</i>
astro857	Star formation We 10-12, LH 0.01, Bonn	<i>B. Parise</i>

astro859	The cosmic history of the intergalactic medium Tu 11-12.45, LH Astronomy, Bonn	<i>C. Porciani</i>
astro891	Seminar on cosmology Tu 14-16, R. 3.19, Bonn	<i>P. Schneider and staff</i>
astro892	Seminar on radio astronomy Th 14, LH 0.05, Bonn	<i>U. Klein, F. Bertoldi, M. Massi, K. Menten</i>
astro893	Seminar on stars, stellar systems, and galaxies Tu 16-18, R. 3.19, Bonn	<i>P. Kroupa, N. Langer, J. Pflamm-Altenburg</i>
astro894	Seminar on astronomy and astrophysics Mo 14-15.30, LH Astronomy, Bonn	<i>P. Kroupa, F. Bertoldi, J. Kerp, U. Klein, M. Kramer, N. Langer, M. Massi, M. Menten, C. Porciani, T. Reiprich, P. Schneider, G. Weigelt, O. Wucknitz</i>
6947	Practical radio interferometry We 13-16, LH 0.05, Bonn	<i>W. Flemmings, F. Bertoldi, O. Wucknitz</i>
6949	Physics of supernovae and gamma-ray bursts We 13.30-15, LH Astronomy, Bonn	<i>S. Yoon</i>
6962	Seminar on theoretical dynamics Fr 14-16, R. 3.19, Bonn	<i>P. Kroupa, J. Pflamm-Altenburg</i>
6965	Seminar on strong gravitational lensing and lens modelling Fr 16-18, R. 3.19, Bonn	<i>O. Wucknitz</i>
6966	Seminar on statistical methods in astrophysics Mo 11-13, R. 3.19, Bonn	<i>P. Schneider and staff</i>
6968	Seminar on galaxy clusters We 16-17.30, R. 3.19, Bonn	<i>T. Reiprich</i>
6969	Seminar on stellar evolution and hydrodynamics Th 13.30-15, R. 3.19, Bonn	<i>N. Langer</i>

Astronomy and Astrophysics

physics711	Particle Astrophysics and Cosmology Tu 10-12, LH, HISKP, We 12, LH, IAP, Bonn Exercises: 1 hr in groups	<i>M. Kowalski</i>
6182	Modern Methods of Molecular Physics 2 hrs Fr 12-13.30, LH III, Cologne	<i>T. Giesen</i>
6189	Computational Astrophysics 2 hrs Mo 10-11.30, SR I. PI, Cologne Lab course: 1 hr on agreement	<i>S. Pflazner</i>
6195	Astrophysics II 4 hrs Tu 10-11.30, Th 12-13.30, SR I. PI, Cologne Exercises: 1 hr on agreement	<i>J. Stutzki</i>
6222	Advanced Seminar on Current Problems in Physics and Astrophysics 2 hrs Mo 16-17.30, SR I. PI, Cologne First meeting: Mo, 18.10.2010 @ 14h	<i>A. Eckart, P. Schilke, S. Schlemmer, J. Stutzki</i>
6228	Advanced Seminar on Relativity and Cosmology II 2 hrs Th 12-13.30, CR THP, Cologne First meeting: Th, 14.10.2010 @ 12h	<i>C. Kiefer</i>
6231	Advanced Seminar on Current Problems in Theoretical Astrophysics 2 hrs Tu 9-10.30, SR I. PI, Cologne First meeting: Th, 19.10.2010 @ 9h	<i>S. Pflazner</i>

Condensed Matter and Statistical Physics, Photonics

physics613	Condensed Matter Physics We 10-12, Fr 9, SR I, HISKP, Bonn Exercises: 1 hr in groups	<i>P.-D. Eversheim, R. Vianden</i>
physics617	Theoretical Condensed Matter Physics Tu 14-16, LH I, PI, Th 9, SR I, HISKP, Bonn Exercises: 2 hrs in groups	<i>H. Monien</i>
physics740	Hands-on Seminar: Experimental Optics and Atomic Physics Mo 9-11 or Mo 11-13, laboratories of the research group, IAP, Bonn	<i>M. Weitz</i>
physics772	Physics in Medicine I: Fundamentals of Analyzing Biomedical Signals Mo 9-11, We 12, SR I, HISKP, Bonn Exercises: 1 hr in groups	<i>K. Lehnertz</i>
physics653	Seminar on "Topics in Quantum Technology - from Quantum Optics to Condensed Matter" Tu 14-16, CR, IAP, Bonn	<i>D. Meschede</i>
physics656	Computational Physics Seminar on Analyzing Biomedical Signals Mo 14-16, SR I, HISKP, Bonn	<i>K. Lehnertz, B. Metsch</i>
6801	Transport in mesoscopic systems Fr 10-12, LH, IAP, Bonn	<i>J. Kroha, O. Zaitsev</i>
6178	Superconductivity 2 hrs Tu 12-13.30, SR II, PI, Cologne	<i>M. Abd-Elmeguid</i>
6179	Quantum Field Theory II 4 hrs We 12-13.30, Fr 10-11.30, SR THP, Exercises: 2 hrs Tu 16-17.30, SR I, PI, Cologne	<i>A. Altland</i>

Condensed Matter and Statistical Physics, Photonics

6181	Structural Phase Transitions and Lattice Dynamics 2 hrs Mo 15.30-17, II. PI, Cologne	<i>M. Braden</i>
6183	Condensed Matter Physics I 3 hrs Tu 10-11.30, Fr 10-10.45, SR II. PI, Exercises: 1 hr Fr 11-11.45, SR II. PI, Cologne	<i>M. Grüninger</i>
6188	Physics of Surfaces and Nanostructures 2 hrs Tu 16-17.30, LH II, Cologne	<i>T. Michely</i>
6190	Physical Foundations of Bioinformatics Methods 2 hrs Mo 14-15.30, CR THP, Exercises: 1 hr We 10-10.45, CR THP, Cologne	<i>M. Porto</i>
6191	New Superconductors 2 hrs Fr 14-15.30, SR II. PI, Cologne	<i>J. Röhler</i>
6193	Supersymmetry: Mathematical structure and physical applications 2 hrs We 14-15.30, CR THP, Cologne	<i>T. Quella</i>
6206	Macromolecular Systems in Soft and Living Matter 42nd IFF-Spring School, February, 14th-25th 2011 see: http://www.fz-juelich.de/iff/fs2011	<i>P.S. Bechthold, C. Buchal, D. E. Bügler, G. Gompper, P. Grünberg, R. Wördenweber</i>
6220	Advanced Seminar on Current Problems in Solid State Physics 2 hrs Mo 14-15.30, SR II. PI, Cologne	<i>M. Abd-Elmeguid, M. Braden, M. Grüninger, T. Michely, J. Hemberger, T. Lorenz</i>

BCGS 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 5th, starting around 3.30 p.m.

Great Lecture Hall of the Bio/Geo Science Departments
Zülpicher Str. 49a in 50674 Cologne

Speaker: Prof. Walter Kutschera (University of Vienna, Austria)

The complete programme will be presented on our webpage before long.



universität**bonn**i

Universität zu Köln



Universität Bonn

Bonn-Cologne Graduate School
of Physics and Astronomy
Wegelerstr. 8
53115 Bonn
Germany

Phone: +49 228 733482

Fax: +49 228 736836

Email: gradschool.physics@uni-bonn.de

<http://www.gradschool.physics.uni-bonn.de>

Universität Köln

Bonn-Cologne Graduate School
of Physics and Astronomy
Zùlpicherstr. 77
50937 Köln
Germany

Phone: +49 221 4703554

Fax: +49 221 4706727

Email: gradschool.physics@uni-koeln.de

<http://www.gradschool.physics.uni-koeln.de>

bcgs