



universität**bonn**

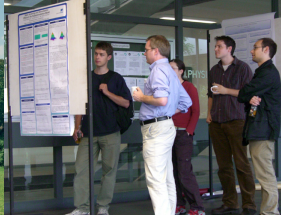
Universität zu Köln



Bonn-Cologne Graduate School
of Physics and Astronomy

Course Overview

Summer Term 2011



BCGS Course Overview

Summer Term 2011

This list of courses provides an overview of lectures and seminars offered within the Master and Diploma programs 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 page 4).

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 programs in Bonn and Cologne. In case you need any support do not hesitate to ask your mentors or the administration.

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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

physics631	Quantum Optics Tu 10-12, Th 15-17, LH, IAP, Bonn Exercises: 1 hr in groups included	<i>M. Weitz</i>
physics635	Laser Spectroscopy Tu 8-10, Th 13-15, LH, IAP, Bonn Exercises: 1 hr in groups included	<i>D. Meschede</i>
physics718	C++ Programming in High Energy Physics We 13-15, LH, IAP, Bonn Exercises: 1 hr in groups	<i>E. von Törne</i>
physics751	 Group Theory Mo 10-12, We 9, SR I, HISKP, Bonn Exercises: 2 hrs in groups Lecture is broadcasted to Cologne: SR II. PI	<i>B. Metsch</i>
6173	 Statistical Physics of Soft and Biological Matter 4 hrs Tu & We 14-15.30 SR THP, Exercises: 2 hrs Tu 16-17.30, SR THP, Cologne Lecture is broadcasted to Bonn: SR I, PI	<i>G. Gompper, M. Ripoll</i>
6182	 Nonequilibrium Physics with Interdisciplinary Applications 2 hrs Tu 10-11.30, SR THP, Cologne Exercises: 1 hr in groups on agreement Lecture is broadcasted to Bonn: CR, IAP	<i>A. Schadschneider</i>
6188	 Topology for Physicists 4 hrs Mo 12-13.30, SR THP, Cologne, and Tu 10-11.30, SR I, HISKP, Bonn	<i>M. Zirnbauer</i>

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

Special BCGS Courses

Seminars

physics651
6218



Joint Seminar on Detectors for Hadronic Particle and Nuclear Physics
Tu 14-16, in turn R. 300, PI, Bonn
and Lib IKP, Cologne
First meeting: Tu, 05.04.2011 in Bonn

*A. Blazhev, K. Desch, J. Jolie,
F. Klein, N. Wermes*

physics652
6221



Joint Seminar on Quantum Simulators
Mo 16-18, in turn CR, IAP, Bonn
and CR THP, Cologne
First meeting: Mo, 04.04.2011 in Bonn & Cologne

D. Meschede, A. Rosch

Intensive Courses

physics719

BCGS Intensive Week (Advanced Topics in High Energy Physics) From Chips to Higgs: LHC Detectors and Physics in one week, Bonn
26.-30.09.2011

N. Wermes and co-workers

physics737

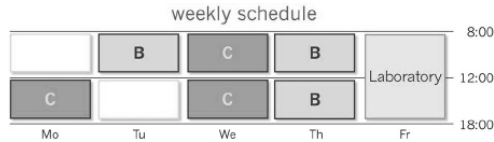
BCGS Intensive Week (Advanced Topics in Photonics and Quantum Optics): Build Your Own Laser, Bonn
15.-19.08.2011

F. Vewinger

6192

BCGS Intensive Week:
Nuclear Electronics - Hands on, Cologne
28.03.-01.04.2011

*A. Blazhev, C. Fransen,
C. Görgen, G. Pascovici,
N. Warr*



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.

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>M. Fiebig, D. Meschede, F. Vewinger, M. Weitz</i>
6200	Miniforschung (Internship during semester break for advanced students), Cologne	<i>Professors and Lecturers of the Physics Institutes</i>

Presentation of Research Groups



Presentation of Research Groups
2 hrs Fr 12:14,
LH, IAP, Bonn and SR THP, 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. First meeting: 15 April 2011

See page 14 for the preliminary program.

General Courses

physics754	General Relativity and Cosmology Mo 12, We 14-16, LH I, PI, Bonn Exercises: 2 hrs in groups	<i>S. Förste</i>
physics774	Electronics for Physicists Tu 10-12, Th 12, LH, HISKP, Bonn Exercises: 1 hr in groups	<i>P.-D. Eversheim</i>
physics775	Nuclear Reactor Physics Th 14-16, SR I, HISKP, Bonn	<i>A. Gillitzer, R. Jahn</i>
6801	Introduction to supersymmetry block course: 20.-22.06.2011, Bonn	<i>E. Kraus</i>
6214	Advanced Seminar on “Physical and technical aspects of future energy supply” 2 hrs Th 10-11.30, Lib IKP, Cologne	<i>A. Dewald</i>

Particle and Nuclear Physics

physics632	Physics of Hadrons Tu 9, SR I, HISKP, Fr 10-12, LH, HISKP, Bonn Exercises: 1 hr in groups	<i>R. Beck</i>
physics633	High Energy Collider Physics Mo 14-16, We 8-10, LH, IAP, Bonn Exercises: 1 hr in groups included	<i>S. Hillert, J. Kroseberg</i>
physics636	Advanced Theoretical Particle Physics Tu 16-18, Fr 9, LH I, PI, Bonn Exercises: 2 hrs in groups	<i>H.-P. Nilles</i>
physics637	Advanced Theoretical Hadron Physics Tu 10-12, Th 9, SR II, HISKP, Bonn Exercises: 2 hrs in groups	<i>B. Kubis, A. Rusetsky</i>

physics639	Advanced Topics in High Energy Particle Physics We 12, Th 8-10, LH, IAP, Bonn Exercises: 1 hr in groups	<i>J. Dingfelder, M. Kowalski</i>
physics712	Advanced Electronics and Signal Processing We 15-17, Fr 9, LH, IAP, Bonn Exercises: 1 hr in groups	<i>S. Böser, H. Krüger</i>
physics713	Particle Detectors and Instrumentation Tu 9, We 10-12, CR I, PI, Bonn Exercises: 1 hr in groups	<i>H. Schmieden</i>
physics714	Advanced Accelerator Physics We 10-12, Th 10-12, SR I, HISKP, Bonn Lecture on 7.04.2011 will take place in LH, HISKP Exercises: 1 hr in groups included	<i>W. Hillert, A. Lehrach, R. Maier</i>
physics716	Statistical Methods of Data Analysis Fr 14-16, SR I, HISKP, Bonn Exercises: 1 hr in groups	<i>I. Brock</i>
physics753	Theoretical Particle Astrophysics Mo 8-10, Tu 12, HS I, PI, Bonn Exercises: 2 hrs in groups	<i>H. Dreiner</i>
physics755	Quantum Field Theory Mo 16-18, Th 12, LH I, PI, Bonn Exercises: 2 hrs in groups	<i>A. Klemm</i>
6802	Stochastic Interacting Particle Systems Th 16-18, SR II, HISKP, Bonn	<i>G. Schütz</i>
physics657	Seminar on Hadron Physics with Antiprotons Th 14-16, SR II, HISKP, Bonn	<i>H.-W. Hammer, C. Hanhart, S. Krewald, B. Kubis, U. Meißner, B. Metsch, A. Nogga, A. Rusetsky, A. Wirzba</i>
physics658	Seminar on Astroparticle Physics Fr 10-12, CR I, PI, Bonn	<i>M. Drees, M. Kowalski, E. von Törne</i>

Particle and Nuclear Physics

6170	Particle Physics 3 hrs on agreement, SR IKP, Cologne	<i>M. Büscher, D. Gotta, S. Schadmand, H. Ströher</i>
6171	Accelerator Mass Spectroscopy 2 hrs We 16-17.30, SR THP, Cologne Exercises: 1 hr on agreement	<i>A. Dewald</i>
6175	Groundbreaking Experiments in Nuclear Physics 2 hrs We 14-15.30, Lib IKP, Cologne	<i>J. Jolie</i>
6179	Physics of Detectors 3 hrs Mo 16, Tu 14-15.30, SR IKP, Cologne	<i>P. Reiter</i>
6187	Selected Problems in Nuclear Structure Physics 2 hrs We 10-11.30, SR IKP, Cologne	<i>A. Zilges</i>
6217	Advanced Seminar on Nuclear Physics 2 hrs Mo 14-15.30, SR IKP, Cologne	<i>M. Büscher, D. Gotta, J. Jolie, P. Reiter, H. Ströher, A. Zilges, A. Dewald, K.O. Zell</i>
6223	Advanced Seminar on Nuclear Astrophysics 2 hrs Th 10-11.30, SR IKP, Cologne	<i>A. Zilges, J. Endres</i>

Astronomy and Astrophysics

astro821	Astrophysics of galaxies Th 15-18, LH Astronomy, Bonn Exercises: 2 hrs by appointment	<i>P. Kroupa, I. Georgiev</i>
astro822	Physics of the interstellar medium Tu 16-19, LH Astronomy, Bonn Exercises: 1 hr by appointment	<i>F. Bertoldi</i>
astro8401	Hydrodynamics We 13.30-15, LH Astronomy, Bonn	<i>J. Braithwaite</i>

astro844	X-ray astronomy Fr 13-15, LH Astronomy, Bonn Exercises: 1 hr by appointment	<i>T. Reiprich</i>
astro845	Observational cosmology We 11-13, LH Astronomy, Bonn Exercises: 1 hr by appointment	<i>C. Porciani, K. Basu</i>
astro846	Wave optics and astronomical applications We 15.30-17, LH 0.02, MPIfR, Bonn	<i>G. Weigelt</i>
astro847	Practical optical astronomy Details to be announced	<i>T. Erben, M. Geffert</i>
astro848	Galactic and intergalactic magnetic fields Tu 13-15, LH 0.05, Bonn Exercises: 1 hr by appointment	<i>U. Klein</i>
astro849	Multiwavelength observations of galaxy clusters Mo 15.30-17, R 0.18, Bonn Exercises: 1 hr by appointment	<i>T. Reiprich</i>
astro851	Stellar and solar coronae Th 9-10.30, LH 0.01, MPIfR, Bonn Exercises: 1 hr by appointment	<i>M. Massi</i>
astro852	Gravitational lensing Tu 10-12, LH Astronomy, Bonn Exercises: 1 hr by appointment	<i>P. Schneider, O. Wucknitz</i>
astro858	Nucleosynthesis Th 11-13, Fr 9, LH 0.05, Bonn Exercises: 1 hr by appointment	<i>N. Langer, S. Yoon</i>
astro891	Seminar on modern cosmology Mo 11-13, LH 0.05, Bonn	<i>C. Porciani, T. Reiprich, P. Schneider, O. Wucknitz</i>
astro892	Seminar on radio astronomy Th 13-14.30, LH 0.05, Bonn	<i>F. Bertoldi, J. Kerp, U. Klein, M. Kramer, W. Vlemmings</i>
astro893	Seminar on stars, stellar systems, and galaxies Tu 16-18, R. 3.19, Bonn	<i>P. Kroupa, N. Langer,</i>

Astronomy and Astrophysics

astro894	Seminar on astronomy and astrophysics Mo 14-15.30, LH Astronomy, Bonn	<i>T. Reiprich, F. Bertoldi, R. Izzard, J. Kerp, U. Klein, M. Kramer, N. Langer, M. Massi, M. Menten, C. Porciani, P. Schneider, G. Weigelt, O. Wucknitz</i>
6944	Binary Stars Mo 11-13, LH Astronomy, Bonn	<i>R. Izzard</i>
6945	Accretion in astrophysics: theory and applications Mo & Tu 9-11, R. 0.18, Bonn Exercises: 1 hr by appointment	<i>P. Podsiadlowski</i>
6965	Seminar on cosmology and selected problems in gravitational lensing research Tu 14-16, R. 3.19, Bonn	<i>P. Schneider and co-workers</i>
6966	Seminar on theoretical dynamics Fr 9-11, R. 3.19, Bonn	<i>P. Kroupa</i>
6968	Seminar on strong gravitational lensing and lens modelling Fr 17-19, R. 3.19, Bonn	<i>O. Wucknitz and co-workers</i>
6970	Seminar on galaxy clusters Th 15-17, R. 0.18, Bonn	<i>T. Reiprich</i>
6971	Seminar on stellar evolution and hydrodynamics Th 13.30-15, R. 3.19, Bonn	<i>J. Braithwaite, N. Langer</i>
physics658	Seminar on Astroparticle Physics Fr 10-12, CR I, PI, Bonn	<i>M. Drees, M. Kowalski, E. von Törne</i>
6172	Active Galaxies 2 hrs We 12-13.30, SR I. PI, Cologne Exercises: 1 hr in on agreement	<i>A. Eckart</i>
6177	Relativity and Cosmology I 4 hrs Mo 16-17.30, We 10-11.30, SR THP Exercises: 2 hrs Th 12-13.30, SR THP, Cologne	<i>C. Kiefer</i>

6178	Star Formation 2 hrs Tu 10-11.30, SR I. PI Exercises: 1 hr Mo 13, SR I. PI, Cologne	<i>V. Ossenkopf, M. Röllig</i>
6184	Molecular Physics II 3 hrs Mo 10-11.30, Tu 12, SR I. PI Exercises: Tu 13. SR I. PI, Cologne	<i>S. Schlemmer, T. Giesen</i>
6215	Advanced Seminar on Topical Subjects of Astrophysics 2 hrs Mo 16-17.30, SR I. PI, Cologne	<i>A. Eckart, P. Schilke, S. Schlemmer, J. Stutzki</i>
6231	Advanced Seminar on Current Problems in Theoretical Astrophysics 2 hrs Tu 8.30-10 SR I. PI, Cologne	<i>S. Pfalzner</i>
6223	Advanced Seminar on Nuclear Astrophysics 2 hrs Th 10-11.30, SR IKP, Cologne	<i>A. Zilges, J. Endres</i>

Condensed Matter and Statistical Physics, Photonics

physics634	Magnetism and Superconductivity We & Fr 10-12, LH, IAP, Bonn Exercises: 1 hr in groups included	<i>E. Soergel</i>
physics638	Advanced Theoretical Condensed Matter Physics Tu 14, Th 10-12, LH I, PI, Bonn Exercises: 2 hrs in groups	<i>J. Kroha</i>
physics738	Lecture on Advanced Topics in Quantum Optics: Basics of Quantum Information Th 10-12, LH, IAP, Bonn Exercises: 1 hr in groups	<i>F. Vewinger</i>

Condensed Matter and Statistical Physics, Photonics

physics739	Lecture on Advanced Topics in Photonics: Photonic Crystals, Plasmonics, and Metamaterials Tu 15-17, LH, IAP , Bonn Exercises: 1 hr in groups	<i>S. Linden</i>
physics740	Hands-on Seminar: Experimental Optics and Atomic Physics Mo 9-11 or 11-13, laboratories of the research group, IAP, Bonn kick-off meeting: April 15th, CR, IAP	<i>M. Weitz and co-workers</i>
physics773	Physics in Medicine II: Fundamentals of Medical Imaging Mo 9-11, LH, IAP, We 12, SR I, HISKP, Bonn Exercises: 1 hr in groups	<i>K. Lehnertz</i>
physics654	Seminar Medical Physics: Physical Fundamentals of Medical Imaging Mo 14-16, SR I, HISKP, Bonn	<i>K. Lehnertz, K. Maier</i>
physics656	Seminar on Topological States in Condensed Matter Systems Tu 10-12, CR II, PI, Bonn	<i>J. Kroha</i>
6169	Experimental Methods in Solid State Physics 2 hrs Tu 14-15.30, SR II. PI, Cologne First Lecture: Tu, 03.05.2011	<i>M. Abd-Elmeguid</i>
6174	Condensed Matter Physics II 3 hrs We 10-11.30, Fr 10, SR II. PI, Cologne	<i>M. Grüniger</i>
6176	Laser in der Medizin 3-Tage Blockkurs in den Semesterferien, Informationen und Anmeldung unter kessler@rheinahr-campus.de	<i>B. Kessler</i>
6180	High Temperature Superconductors 2 hrs Fr 14-15.30, SR I. PI, Cologne	<i>J. Röhler</i>
6181	Quantum Field Theory I 4 hrs Mo 14-15.30, SR THP, We 12-13.30, LH III, Exercises: 2 hrs Tu 14-15.30, CR THP, Cologne	<i>T. Quella</i>

6186	Semiconductor Physics and Nanoscience physical applications 2 hrs Tu 12-13.30, SR II. PI, Cologne	<i>R. Wördenweber</i>
6189	Statistical Mechanics of Biological Evolution 3 hrs We 12-13.30, Fr 11, CR THP, Cologne	<i>M. Lässig</i>
6211	Advanced Seminar on Nobel Prizes in Solid State Physics 2 hrs Mo 14-15.30, SR II. PI, Cologne	<i>M. Braden, M. Grüninger, T. Michely</i>
6213	Advanced Seminar: Magnetism and Spintransport in Nanostructures 2 hrs We 14-15.30, CR THP, Cologne	<i>D. E. Bügler, P. Grünberg</i>
6216	Advanced Seminar on Virtual Particles 2 hrs Mo 16-17.30, SR II. PI, Cologne	<i>J. Jakumeit, G. Nimtz</i>

Presentation of Research Groups

Biweekly presentations to introduce the research groups in Bonn and Cologne. During one meeting, two Professors from Bonn and Cologne will summarize their research in a talk.

Sessions will take place:

Fr 12-14, LH, IAP, Bonn and SR THP, Cologne (video conference)

The Bonn part of this event is a joint activity of Fachschaft Physik and BCGS.

Preliminary Program

15.04.2011	<i>U. Thoma</i>	HISKP (B)	Hadron Physics
	<i>P. Reiter</i>	IKP (C)	At the limits - experiments with exotic nuclei
29.04.2011	<i>J. Berg</i>	THP (C)	Noise versus information - statistical physics and biological systems
	<i>N. Wermes</i>	PI (B)	Particle Physics at High Energies - Novel Detector Development and Physics Experiments
13.05.2011	<i>M. Braden</i>	II.PI (C)	The Neutron: the ideal sonde for phonons and magnetism
	<i>H.-W. Hammer</i>	HISKP (B)	Theoretical hadron physics and quantum field theory*
27.05.2011	<i>C. Kiefer</i>	THP (C)	Quantum Gravity, Cosmology, and Black Holes
	<i>M. Kowalski</i>	PI (B)	From neutrinos to dark energy - astroparticle physics in Bonn
10.06.2011	<i>T. Nattermann</i>	THP (C)	From disordered superconductors to helimagnets
	<i>M. Fiebig</i>	HISKP (B)	Solid state physics with lasers*
01.07.2011	<i>A. Klemm</i>	PI (B)	String Theory
	<i>A. Eckart</i>	I. PI (C)	Nuclei of Nearby Galaxies

*Preliminary title

Please check the following website for updates on the program:

<http://www.physik.uni-koeln.de/195.html>

Poster Session: Insights into the research projects of the BCGS-members

Once a year, BCGS-students present their scientific work in a poster session providing insights into their research projects.

The next session will take place

31.05.2011, 14.00 h
Foyer of the Physics' Institutes
Zülpicher Str. 77 in 50937 Cologne

Additionally, there will be a Colloquium talk at 16:45 h in Lecture Hall II,
Speaker: Prof. Dr. Cornelia Denz, WWU Münster

“Creating organization by light -
Optical control of matter by holographic optical tweezers”

We cordially invite all interested students and faculty to discuss at the posters and the informal get-together after the talk

Cornelia Denz is head of the Institute of Applied Physics and the Center for Nonlinear Science at University of Münster. In 1992 she received the Lise Meitner-Award for her work on optical neural networks and in 1999 the Adolf Messer-Award for the development of a nonlinear optical motion detection microscope, respectively. Her main research interests are on nonlinear optics and photonics, emphasizing basic nonlinear phenomena in optics as well as applications in information technology and life sciences.

Notes



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Universität zu Köln



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