

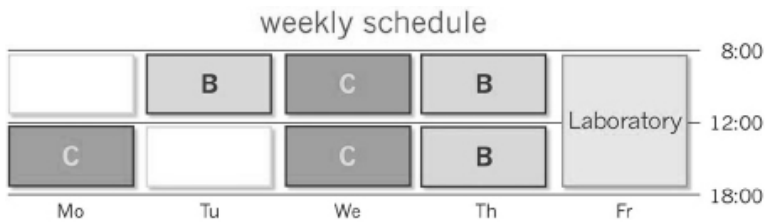
Bonn-Cologne Graduate School
of Physics and Astronomy



Course Overview

Winter Term 2014/2015





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 2014/2015

This list of courses provides an overview of lectures and seminars offered within the Master 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 an early access into 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.....	5
Particle and Nuclear Physics.....	6
Astronomy and Astrophysics.....	8
Condensed Matter and Statistical Physics, Photonics...	10
BCGS Grand Opening.....	13

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



Teaching Exchange



Joined Course



Special BCGS Courses

Lectures

physics611	Particle Physics Tu 14-16, LH I, PI, Th 14-16, SR I, HISKP, Bonn Exercises: 1 hr in groups included	K. Desch
physics614 	Laser Physics and Nonlinear Optics Tu 10-12, Th 14-16, LH, IAP, Bonn Exercises: 1 hr in groups included Lecture is recorded, video is available on demand	D. Meschede
physics615 	Theoretical Particle Physics Mo 16-18, Tu 16-18, LH I, PI, Bonn Exercises: 2 hrs in groups Video broadcast on demand, please contact forste@th.physik.uni-bonn.de	H. Dreiner
physics616 	Theoretical Hadron Physics Tu 10-12, LH, HISKP, Th 9, SR II, HISKP, Bonn Exercises: 2 hrs in groups Video broadcast on demand, please contact forste@th.physik.uni-bonn.de	U. Meißner, A. Rusetsky
physics620	Advanced Atomic, Molecular and Optical Physics Tu 12-14, Th 10-12, LH, IAP, Bonn Exercises: 1 hr in groups included	F. Vewinger
astro812	Cosmology Tu 10-13.15, R 0.012, AlfA, Bonn Exercises: 1 hr in groups	P. Schneider, H. Hildebrandt
astro841	Radio astronomy: tools, applications and impacts Tu 16, Th 16-18, R 0.012, AlfA, Bonn Exercises arranged by appointment	U. Klein
53102	Solid State Theory 3 hrs lectures & 1 hr tutorials every second week Th 8-9.30, SR THP, Fr 12-13.30, SR II.PI, Cologne	M. Garst
53103	Applied Accelerator and Nuclear Physics 2 hrs We 10-11.30, SR IKP, Cologne	A. Dewald

Special BCGS Courses

53108	Theoretical Nuclear Physics I - The Nuclear Shell Modell 2 hrs Tu 10-11.30, SR IKP, Cologne	J. Jolie
53109	The Early Universe 2 hrs Mo 16-17.30 SR THP, Cologne	C. Kiefer
53110	Foundations of Quantum Theory 2 hrs We 10-11.30 SR THP, Cologne	C. Kiefer
53113	Superconductivity 2 hrs We 10-11.30, SR II. PI, Cologne	T. Lorenz
53114	Introduction to Biophysics 4 hrs Mo 14-15.30 SR IKP, We 14-15.30 SR THP Exercises: 2 hrs We 16-17.30, SR THP, Cologne	B. Maier

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.

If you are interested in a specific course but are unable to travel, please inquire if video broadcast is possible.

Intensive Courses

physics719	BCGS Intensive Week (Advanced Topics in High Energy Physics): Statistical and Computational Methods for Experimental Particle Physics at LHC Detectors, Bonn September 22-26, 2014, for more information see http://pi.physik.uni-bonn.de/~evt/teaching/intensiveweek14/	E. von Törne
53130	BCGS Intensive Week: Experiment and Simulation on Biological Systems, Cologne February 23-27, 2015 Please note: number of participants is limited to 8. Information on application will be published soon on: http://www.biophysics.uni-koeln.de/	B. Maier, J. Berg

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	E. von Törne
physics732	Optics Lab, Bonn 4 to 6 weeks on agreement http://www.iap.uni-bonn.de/opticslab/	F. Vewinger, S. Linden, D. Meschede, M. Weitz
53199	Miniforschung (Internship during semester break for advanced students), Cologne	Professors and Lecturers of the Physics Institutes

General Courses

physics606	Advanced Quantum Theory Mo 12-14, We 13, LH I, PI, Bonn Exercises: 2 hrs in groups	M. Drees
physics607	Advanced Theoretical Physics Mo 12-14, We 13, LH HISKP, Bonn Exercises: 2 hrs in groups	B. Kubis
physics751	Group Theory We 14-17, SR I, HISKP, Bonn Exercises: 2 hrs in groups	C. Hanhart, S. Krewald, T. Luu, A. Wirzba
physics760	Computational Physics Tu 10-12, SR I, HISKP, Bonn Exercises: 2 hrs in groups	C. Urbach

General Courses

physics774	Electronics for Physicists Tu 14-16, Th 12, LH, HISKP, Bonn Exercises: 1 hr in groups	P.-D. Eversheim
physics654	Seminar on Computational Physics: How to Simulate the Physical World? Tu 14-16, Th 12, LH, HISKP, Bonn Exercises: 1 hr in groups	C. Kollath
6839	Public Presentation of Science 2 hrs on agreement, Bonn	H. Dreiner
6951	Seminar on Scientific Writing We 10-12, R 0.008, Alfa, Bonn	R. Izzard
53080	Advanced Statistical Physics 4 hrs Tu 14-15.30, LH III, Th 10-11.30, SR I. PI, Exercises: 2 hrs Mo upon agreement	J. Krug
53082	Advanced Quantum Mechanics 4 hrs Mo 10-11.30, Tu 8-9.30, LH III, Exercises: 2 hrs We upon agreement	S. Trebst

Particle and Nuclear Physics

physics612	Accelerator Physics We, Th 10-12, SR I, HISKP, Bonn Exercises: 1 hr in groups included	W. Hillert
physics618	Physics of Particle Detectors Tu 12, Th 12-14, SR I, HISKP, Bonn Exercises: 1 hr in groups	B. Ketzer
physics711	Particle Astrophysics and Cosmology Mo 10-12, We 9, LH, HISKP, Bonn Exercises: 1 hr in groups	J. Dingfelder

physics713	Particle Detectors and Instrumentation Tu 13, Th 14-16, LH, HISKP, Bonn Exercises: 1 hr in groups	J. Kaminski
physics715	Experiments on the Structure of Hadrons Mo 14-16, LH, HISKP, Bonn Exercises: 1 hr in groups	A. Gillitzer
physics752	Superstring Theory Th 13, Fr 12-14, LH I, PI, Bonn Exercises: 2 hrs in groups	S. Förste
physics651	Higgs ... and now? - Seminar on Current Forefront Research in Particle Physics Th 16-18, CR II, PI, Bonn	I. Brock, K. Desch, J. Dingfelder, N. Wermes
physics653	Seminar on Current Topics in Experimental and Theoretical Particle Physics: Hunting for Physics Beyond the Standard Model We 10-12, SR II, HISKP, Bonn	M. Drees, H. Dreiner, C. Hanhart, S. Krewald, T. Luu, A. Wirzba
53105	Tools for Particle Physics 2 hrs on appointment, SR IKP, Cologne	D. Gotta, S. Schadmand, H. Ströher
53110	Nuclear Physics II 3 hrs We 16.-16.45, Fr 10-11.30, SR IKP, Cologne	J. Jolie
53404	Advanced Seminar on Nuclear Physics 2 hrs We 14-15.30, SR IKP, Cologne	M. Büscher, D. Gotta, J. Jolie, P. Reiter, H. Ströher, A. Zilges, A. Dewald, S. Schadmand, K.O. Zell
53410	Advanced Seminar on Heavy Ion Physics 2 hrs Th 14-15.30, Lib IKP, Cologne	P. Reiter

Astronomy and Astrophysics

astro608	Theoretical Astrophysics We 12.15-13, Th 11-13, R 0.012, AlfA, Bonn Exercises arranged by appointment	C. Porciani
astro801	Introduction to Astrophysics Details to be announced, Bonn	U. Klein
astro811	Stars and stellar evolution Th 9-11, R 0.012, Fr 8.45, Cip-Pool, AlfA, Bonn Exercises: 2 hrs in groups	R. Izzard, N. Langer
astro8503	Dark matter and dark energy explored by radio and x-ray observations Fr 13-15, R 0.008, AlfA, Bonn Exercises: 2 hrs in groups	J. Kerp, T. Reiprich, Y. Zhang
astro853	The physics of dense stellar systems Mo 15-17, R 3.010, AlfA, Bonn	P. Kroupa
astro854	Numerical gravitational dynamics Th 14-16, R 0.008, AlfA, Bonn Exercises arranged by appointment	J. Pflamm-Altenburg
astro856	Quasars and microquasars Th 13-15, R 0.01, MPIfR, Bonn	M. Massi
astro891	Seminar on cosmology Tu 14-16, R 3.010, AlfA, Bonn initial meeting see astro 894	C. Porciani, T. Reiprich, P. Schneider
astro892	Seminar on radio astronomy Th 14-15, R 0.012, AlfA, Bonn initial meeting see astro 894	F. Bertoldi, J. Kerp, U. Klein, M. Kramer, M. Massi, K. Menten
astro893	Seminar on stars, stellar systems, and galaxies Tu 16-18, R 3.010, AlfA, Bonn initial meeting see astro 894	P. Kroupa, J. Pflamm-Altenburg

astro894	Seminar on astronomy and astrophysics Mo 14-15.30, R 0.008, AlfA, Bonn from October 13 on	F. Bertoldi, J. Kerp, U. Klein, M. Kramer, N. Langer, M. Massi, K. Menten, C. Porciani, T. Reiprich, P. Schneider
6952	Seminar on theoretical dynamics Fr 14-16, R 3.010, AlfA, Bonn	P. Kroupa, J. Pflamm-Altenburg
6953	Seminar on stellar evolution and hydrodynamics Th 13.30-15, R 3.010, AlfA, Bonn	R. Izzard, N. Langer
6954	Seminar on galaxy clusters Th 15-16.30, R 0.006, AlfA, Bonn	T. Reiprich, Y. Zhang
6955	Seminar on selected problems in extragalactic astronomy and cosmology Th 16-18, R 3.010, AlfA, Bonn	C. Porciani, P. Schneider
6964	Seminar on technical and computational aspects of astronomy Fr 9.45-10.45, R 3.010, AlfA, Bonn	R. Izzard
physics711	Particle Astrophysics and Cosmology Mo 10-12, We 9, LH, HISKP, Bonn Exercises: 1 hr in groups	J. Dingfelder
53104	Galaxy Dynamics 2 hrs We 10-11.30, SR I. PI, Exercises: 1 hr Th 13, SR IKP, Cologne	A. Eckart
53111	Measurement Techniques in Molecular Physics 2 hrs Th 12-13.30, CR THP, Cologne	A. Kiendler-Scharr
53116	Star formation 2 hrs Mo 8-10, CR THP, Cologne	S. Pfalzner
53119	Molecular Physics I 3 hrs Tu 12-13.30, Fr 8, SR I. PI, Problem Class: 1 hr Fr 9 SR I. PI, Cologne	S. Schlemmer

Astronomy and Astrophysics

53121	Astrophysics II 4 hrs We 12-13.30, Fr 16-17.30, SR I. PI, Cologne Exercises: 1 hr Tu 16-17.30 on appointment	J. Stutzki
53123	Molecular Symmetry 2 hrs Mo 17.45-19.15, SR I. PI, Problem Class: 2 hrs Fr 10-11.30, SR I. PI, Cologne	S. Schlemmer, P. Jensen
53405	Advanced Seminar on Topical Subjects of Astrophysics 2 hrs Mo 14-15.30, SR I. PI, Cologne	A. Eckart, L. Labadie, P. Schilke, S. Schlemmer, J. Stutzki
53407	Advanced Seminar on Relativity and Cosmology 2 hrs Tu 10-11.30, SR THP, Cologne	C. Kiefer
53412	Seminar on Computational Methods in Astrophysics 2 hrs Tu 12-12.30, SR IKP, Cologne	S. Walch

Condensed Matter and Statistical Physics, Photonics

physics613	Condensed Matter Physics We 10-12, Fr 12-14, LH, IAP, Bonn Exercises: 1 hr in groups included	S. Linden
physics617	Theoretical Condensed Matter Physics We 12, Fr 10-12, LH, HISKP, Bonn Exercises: 2 hrs in groups	J. Kroha
physics740	Hands-on Seminar: Experimental Optics and Atomic Physics Mo 9-11, IAP, Bonn	M. Weitz and co-workers
physics741	Modern Spectroscopy We 14-16, LH, IAP, Bonn Exercises: 1 hr in groups	F. Vewinger

physics742	Ultracold Atomic Gases: Experiment and Theory Tu 14-16, Th 12-14, LH, IAP, Bonn Exercises: 1 hr in groups included	M. Köhl, C. Kollath
physics771	Environmental Physics & Energy Physics Th 14-16, LH 118, AVZ I, Bonn	B. Diekmann
physics772	Physics in Medicine I: Fundamentals of Analyzing Biomedical Signals Mo 10-12, We 12, SR I, HISKP, Bonn Exercises: 1 hr in groups	K. Lehnertz
physics652	Seminar on Ultracold Atoms - Exploring Physics in the Nanokelvin Temperature Regime Mo 14-16, LH, IAP, Bonn	M. Köhl
physics655	Computational Physics Seminar on Analyzing Biomedical Signals Mo 14-16, SR I, HISKP, Bonn	K. Lehnertz, B. Metsch
53100	Introduction to Strongly Correlated Electron Systems 2 hrs Mo 10-11.30, SR II, PI, Cologne	M. Abd-Elmeguid
53106	Optical Spectroscopy 2 hrs Tu 14-15.30, SR II, PI, Cologne	M. Grüninger
53111	Measurement Techniques in Molecular Physics 2 hrs Th 12-13.30, CR THP, Cologne	A. Kiendler-Scharr
53112	Condensed Matter Physics I 3 hrs Tu 10-11.30, Th 12-13.30, SR II, PI, Cologne Exercises: 1 hr in groups included	P. van Loosdrecht
53115	Quantum Field Theory II 4 hrs We 8-9.30, LH II, Fr 14-15.30, SR I, PI, Exercises: 2 hrs Th 10-11.30, SR II, PI, Cologne	D. Bagrets
53117	Conformal Field Theory 4 hrs Mo 12-13.30, SR THP, We 12-13.30, LH III, Cologne	T. Quella

Condensed Matter and Statistical Physics, Photonics

53118	High Temperature Superconductors 2 hrs Fr 14-15.30, SR II. PI, Cologne	J. Röhler
53119	Molecular Physics I 3 hrs Tu 12-13.30, Fr 8, SR I. PI, Problem Class: 1 hr Fr 9 SR I. PI, Cologne	S. Schlemmer
53123	Molecular Symmetry 2 hrs Mo 17.45-19.15, SR I. PI, Problem Class: 2 hrs Fr 10-11.30, SR I. PI, Cologne	S. Schlemmer, P. Jensen
53124	Physics of Surfaces and Nanostructures 2 hrs Mo 16-17.30, CR THP, Cologne	T. Michely
53402	Advanced Seminar on Current Problems in Solid State Physics: "Composite Particles & Many-Body Excitations" 2 hrs Mo 14-15.30, SR II. PI, Cologne First meeting: Mo 06.10.2014, 14 h see: http://www.ph2.uni-koeln.de/235.html	M. Braden, A. Grüneis, M. Grüninger, P. van Loosdrecht, T. Michely, J. Hemberger, T. Lorenz
53408	Advanced Seminar on Statistical Biology 2 hrs Th 12-13.30, SR THP, Cologne	J. Berg, J. Krug, M. Lässig, B. Maier
53122	Quantum Nature of Materials - Functional Soft Matter 46th IFF-Spring School, 23.02. - 06.03.2015 see: http://www.iff-springschool.de	P.S. Bechthold, C. Buchal, D.E. Bürgler, G. Gompper, R. Würdenweber

BCGS Grand Opening

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

December 9th, 2014

Lecture Hall I (Georg-Simon Ohm Hörsaal)
Zülpicher Str. 77 in 50937 Cologne

The colloquium talk will be given at 16.45 h by

Professor Albert Fert
(UMP CNRS-Thales & Université Paris-Sud, France),
Nobel laureate 2007 in Physics, on
“Spin-orbitronics, a new direction for spintronics”.

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



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