

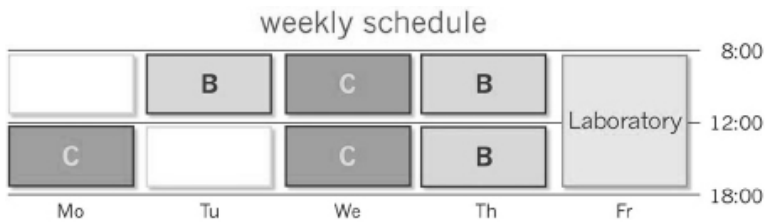
Bonn-Cologne Graduate School
of Physics and Astronomy



Course Overview

Winter Term 2017/2018





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 2017/2018

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.....	12

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


- THP NB - Neubau Institut für Theoretische Physik
Zülpicher Str. 77a, 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

physics614	Laser Physics and Nonlinear Optics Tu, Th 14-16, LH, IAP, Bonn Exercises: 1 hr in groups included	M. Weitz
physics615	Theoretical Particle Physics Mo 16-18, Tu 16, LH I, PI, Bonn Exercises: 2 hrs in groups	M. Drees
astro811	Stars and Stellar Evolution specific: Stellar Structure and Evolution Th 9-11, R 0.012, AlfA, Fr 8.45-9.45, CIP-Pool, AlfA, Bonn Exercises: 1 hr in groups	N. Langer, L. Grassitelli
astro812	Cosmology Tu 10-13, R 0.012, AlfA, Bonn Exercises: 1 hr in groups	H. Hildebrandt, P. Schneider
astro8503	Radio and X-Ray Observations of Dark Matter and Dark Energy Fr 13-15, R 0.008, AlfA, Bonn Exercises/lab course arranged by appointment	T. Reiprich, Y. Zhang
14756.2008	Biological Physics I 3 hrs Mo 14-15.30, SR IKP, We 14, SR THP Exercises: 1 hr We 14.45, SR THP, Cologne	B. Maier
14756.2014	Relativity and Cosmology I 4 hrs Mo 16-17.30, We 10-11.30, SR THP Exercises: 2 hrs Th 14-15.30, CR1 THP NB, Cologne	C. Kiefer
14756.2018	Nuclear Physics II (Nuclear Structure and Reactions) 3 hrs We 16, Fr 10-11.30, SR IKP, Cologne	P. Reiter

Special BCGS Courses

14756.2034	Probability Theory and Stochastic Processes for Physicists 2 hrs lectures We 10-11.30, CR2 THP NB, Exercises: 1 hr We 12, CR2 THP NB, Cologne	D. Witthaut
------------	--	-------------

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

14756.2054	BCGS Intensive Week: Numerical Modeling in Astrophysics, Cologne September 11-15, 2017, for more information see https://hera.ph1.uni-koeln.de/~walch/BCGS/Intensive_Week_2017.html	S. Walch-Gassner, D. Seifried
------------	---	-------------------------------

14756.2055	BCGS Intensive Week: Topics in Advanced Spectroscopy of Solids, Cologne September 25-29, 2017	F. Parmigiani, P. van Loosdrecht
------------	---	-------------------------------------

physics719	BCGS Intensive Week (Advanced Topics in High Energy Physics): The Hunt for the Higgs Boson, Bonn October 2-6, 2017, for more information see https://www.hep1.physik.uni-bonn.de/teaching/intensiveweek/index	E. von Törne
------------	--	--------------

14756.2056	BCGS Intensive Week: Experiment and Simulation on Biological Systems Cologne, March 5-9, 2018 Please note: number of participants is limited. Information on application will be published soon on: http://www.biophysics.uni-koeln.de/Teaching	J. Berg, B. Maier
------------	--	-------------------

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

physics732	Optics Lab, Bonn 4 to 6 weeks on agreement http://www.iap.uni-bonn.de/opticslab/	F. Vewinger, M. Köhl, S. Linden, D. Meschede, M. Weitz
physics799	Internships in the Research Groups, Bonn	Professors and Lecturers of the Physics Institutes
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	J. Kroha
physics751	Group Theory We 10-13, LH, HISKP, Bonn Exercises: 2 hrs in groups	C. Hanhart, A. Wirzba
physics760	Computational Physics Tu 10-12, SR I, HISKP, Bonn Exercises: 2 hrs in groups	T. Luu, C. Urbach
physics774	Electronics for Physicists Tu 10-12, Th 12, LH, HISKP, Bonn Exercises: 1 hr in groups	P.-D. Eversheim

6839	Public Presentation of Science 2 hrs on agreement, Bonn	H. Dreiner
------	--	------------

14756.2000	Advanced Statistical Physics 4 hrs Tu 8-9.30, Th 10-11.30, LH III, Cologne Exercises: 2 hrs Mo on appointment	J. Berg
------------	---	---------

14756.2002	Advanced Quantum Mechanics 4 hrs Mo 10-11.30, Tu 14-15.30, LH III, Cologne Exercises: 2 hrs We on appointment	M. Zirnbauer
------------	---	--------------

Particle and Nuclear Physics

physics611	Particle Physics Tu 10-12, Th 8-10, LH, IAP, Bonn Exercises: 1 hr in groups included	N. Wermes
------------	--	-----------

physics612	Accelerator Physics block course March 5-16, 2018 8-12, SR I, HISKP, Bonn Exercises: 1 hr in groups included	M. Bai
------------	---	--------

physics616	Theoretical Hadron Physics We 14-17, SR I, HISKP, Bonn Exercises: 2 hrs in groups	A. Nogga, A. Rusetsky
------------	---	-----------------------

physics618	Physics of Particle Detectors Tu, Th 12-14, LH I, PI, Bonn Exercises: 1 hr in groups	J. Dingfelder
------------	--	---------------

physics715	Experiments on the Structure of Hadrons Th 12-14, SR II, HISKP, Bonn Exercises: 1 hr in groups	A. Gillitzer
------------	--	--------------

physics7501	Advanced Quantum Field Theory Mo 10-12, Th 9, LH, HISKP, Bonn Exercises: 2 hrs in groups	B. Kubis
physics752	Superstring Theory Tu 14, Fr 12-14, LH I, PI, Bonn Exercises: 2 hrs in groups	S. Förste
physics753	Theoretical Particle Astrophysics We 8-10, Fr 10-12, LH, HISKP, Bonn Exercises: 2 hrs in groups	H. Dreiner
physics651	Seminar on Current Topics in High Energy Physics Fr 12-14, SR I, HISKP, Bonn	J. Dingfelder
physics654	Seminar on the Analysis of Hadron Physics Experiments Mo 14-16, SR II, HISKP, Bonn	A. Thiel
14756.2009	Tools for Particle Physics 2 hrs We on appointment, SR IKP, Cologne	D. Gotta, H. Ströher
14756.2010	Theoretical Nuclear Physics I (The Nuclear Shell Modell) 2 hrs Th 10-11.30, SR IKP, Cologne	J. Jolie
14756.2015	Applied Nuclear Physics 2 hrs Tu 10-11.30, SR IKP, Cologne	A. Dewald
14756.2022	Selected Problems in Nuclear Structure 2 hrs Mo 12-13.30, SR IKP, Cologne	J. Jolie
14756.5004	Advanced Seminar on Nuclear Physics 2 hrs We 14-15.30, SR IKP, Cologne	A. Dewald, D. Gotta, J. Jolie, P. Reiter, H. Ströher, A. Zilges

Astronomy and Astrophysics

astro608	Theoretical Astrophysics We 12, Th 11-13, R 0.012, AlfA, Bonn Exercises: 2 hrs in groups	C. Porciani
astro801	Introduction to Astrophysics Details to be announced, Bonn	P. Schneider
astro841	Radio astronomy: tools, applications and impacts Tu 14-16, Th 15-16, R 0.012, AlfA, Bonn Exercises arranged by appointment	F. Bertoldi, St. Mühle
astro8531	The Physics of Dense Stellar Systems Mo 15-18, R 0.012, AlfA, Bonn Exercises arranged by appointment	P. Kroupa
astro856	Quasars and microquasars Th 13-15, R 0.01, MPIfR, Bonn	M. Massi
astro830	Seminar on astronomy and astrophysics Mo 14-15.30, R 0.008, AlfA, Bonn	Astronomy Professors and Lecturers
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	N. Langer
6954	Seminar on galaxy clusters Th 15-17, 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
6959	Seminar on cosmology Tu 14-16, R 3.010, AlfA, Bonn	P. Schneider, C. Porciani, T. Reiprich

6960	Seminar on radio astronomy Th 18-19, R 0.012, AlfA, Bonn	F. Bertoldi, J. Kerp, M. Kramer, M. Massi, K. Menten
6961	Seminar on stars, stellar systems, and galaxies Tu 16.15-17.45, R 3.010, AlfA, Bonn	P. Kroupa, J. Pflamm-Altenburg
physics753	Theoretical Particle Astrophysics We 8-10, Fr 10-12, LH, HISKP, Bonn Exercises: 2 hrs in groups	H. Dreiner
14756.2007	Advanced Astrophysics 4 hrs Tu 10-11.30, We 12-13.30, SR I. PI, Cologne Exercises: 2 hrs Tu on appointment	P. Schilke
14756.2013	Measurement Techniques in Molecular Physics 2 hrs Th 12-13.30, CR THP, Cologne	A. Kiendler-Scharr
14756.2021	Molecular Physics I 3 hrs Tu 12-13.30, Fr 14, SR I. PI, Problem Class: 1 hr Fr 15 SR I. PI, Cologne	S. Schlemmer, O. Asvany
14756.2025	Formation of the Solar System 2 hrs Mo 8-9.30, CR THP, Cologne	S. Pfalzner
14756.5005	Advanced Seminar in Astrophysics 2 hrs Mo 14-15.30, SR I. PI, Cologne	A. Eckart, L. Labadie, P. Schilke, S. Schlemmer, J. Stutzki, S. Walch-Gassner

Condensed Matter and Statistical Physics, Photonics

physics613	Condensed Matter Physics Mo, We 10-12, LH, IAP, Bonn Exercises: 1 hr in groups included	S. Linden
physics617	Theoretical Condensed Matter Physics Tu 12, Th 10-12, LH, HISKP, Bonn Exercises: 2 hrs in groups	H. Monien
physics620	Advanced Atomic, Molecular and Optical Physics Tu 12-14, Th 10-12, LH, IAP, Bonn Exercises: 1 hr in groups included	M. Köhl
physics741	Modern Spectroscopy We 14-16, LH, IAP, Bonn Exercises: 1 hr in groups	F. Vewinger
physics7502	Random Walks and Diffusion Th 14-16, SR II, HISKP, Bonn Exercises: 1 hr in groups included	G. Schütz
physics767	Computational Methods in Condensed Matter Theory Tu 9, Fr 10-12, LH, IAP, Bonn Exercises: 2 hrs in groups	C. Kollath
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
physics776	Physics in Medicine III: Physics of Magnetic Resonance Imaging Tu 14-16, Th 16, SR II, HISKP, Bonn Exercises: 1 hr in groups, Th 17, SR II, HISKP	T. Stöcker

physics652	Seminar on Key Experiments in Quantum Optics Mo 14-16, LH, IAP, Bonn	F. Vewinger
physics655	Computational Physics Seminar on Analyzing Biomedical Signals Mo 14-16, SR I, HISKP, Bonn	K. Lehnertz, B. Metsch
114756.2004	Quantum Field Theory II 4 hrs Mo 12-13.30, We 8-9.30, CR1 THP NB, Exercises: 2 hrs Th 14-15.30, SR THP NB, Cologne	S. Diehl
14756.2005	Optical Spectroscopy 2 hrs Fr 10-11.30, SR II. PI, Cologne	M. Grüninger
14756.2006	Physics of Surfaces and Nano-Structures 2 hrs Th 10-11.30, SR THP NB, Cologne	T. Michely
14756.2012	Condensed Matter Physics I 3 hrs We 10-11.30, Th 12-13.30, SR II. PI, Cologne Exercises: 1 hr in groups included	T. Lorenz
14756.2013	Measurement Techniques in Molecular Physics 2 hrs Th 12-13.30, CR THP, Cologne	A. Kiendler-Scharr
14756.2017	Superconductivity 2 hrs Mo 10-11.30, SR II. PI, Cologne	M. Braden
14756.2020	Solid State Theory 3 hrs Th 8-9.30, Fr 12-13.30, SR THP NB, Cologne Exercise: 1 hr in groups	A. Rosch
14756.2021	Molecular Physics I 3 hrs Tu 12-13.30, Fr 14, SR I. PI, Problem Class: 1 hr Fr 15 SR I. PI, Cologne	S. Schlemmer, O. Asvany
14756.2023	Introduction to Renormalization with Applications in Condensed Matter Physics 2 hrs We 16-17.30, SR THP, Exercises: 1 hr We 17.45, SR THP, Cologne	M. Scherer

14756.5000	Advanced Seminar on Experimental techniques for Condensed Matter Physics: new developments 2 hrs Mo 14-15.30, SR II, PI, Cologne see: http://www.ph2.uni-koeln.de/799.html	Y. Ando, M. Braden, A. Grüneis, M. Grüninger, P. van Loosdrecht, T. Michely, J. Hemberger, T. Lorenz
14756.5002	Advanced Seminar on Statistical and Biology Physics: Stochastic Thermodynamics with Biophysical Applications 2 hrs Fr 10-11.30, CR 2 THP NB, Cologne	J. Berg, T. Bollenbach, J. Krug, B. Maier
	Physics of Life 49th IFF-Spring School, 26.02.-09.03.2018 see: http://www.iff-springschool.de	G. Gompper, J. Eileti, et al.

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

November 3rd, 2017
Wolfgang Paul Lecture Hall
Kreuzbergweg 28 in 53115 Bonn

The colloquium talk will be given at 16.00 h by

Professor Uwer, University of Heidelberg, on
'With "beautiful" quarks to new phenomena in particle physics'



Universität Bonn
Bonn-Cologne Graduate School
of Physics and Astronomy
Nussallee 14-16
53115 Bonn
Germany

Phone: +49 228 732534 & 734832
Fax: +49 228 733474
Email: gradschool.physics@uni-bonn.de
<http://www.gradschool.physics.uni-bonn.de>

Universität zu Köln
Bonn-Cologne Graduate School
of Physics and Astronomy
Zùlpicher Str. 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>