

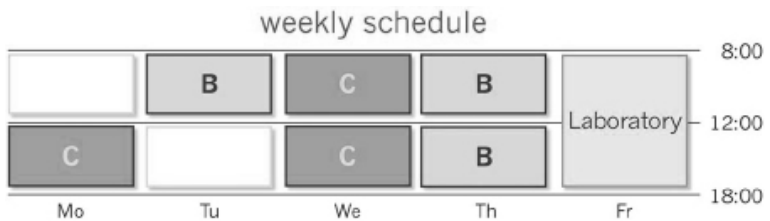
Bonn-Cologne Graduate School of Physics and Astronomy



Course Overview

Winter Term 2013/2014





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 2013/2014

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.

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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

- 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

physics614 	Laser Physics and Nonlinear Optics Tu 10-12, Th 14-16, LH, IAP, Bonn Exercises: 1 hr in groups included Video broadcast on demand, please contact vewinger@iap.uni-bonn.de	<i>M. Weitz</i>
physics618	Physics of Particle Detectors Tu 14-16, Th 12, LH, IAP, Bonn Exercises: 1 hr in groups	<i>J. Dingfelder, N. Wermes</i>
physics620	Advanced Atomic, Molecular and Optical Physics Tu 12, Th 10-12, LH, IAP, Bonn Exercises: 1 hr in groups included	<i>M. Köhl</i>
physics739 	Basics of Quantum Information We 14-16, LH, IAP, Bonn Exercises: 1 hr in groups Video broadcast on demand, please contact vewinger@iap.uni-bonn.de	<i>F. Vewinger</i>
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	<i>M. Garst</i>
53105	Superconductivity 2 hrs We 10-11.30, SR II. PI, Cologne	<i>T. Lorenz</i>
53110	Nuclear Physics II 3 hrs We 17.45-18.30, Fr 10-11.30, SR IKP, Cologne	<i>J. Jolie</i>
53114	Stochastic Processes 3 hrs (and talks upon agreement) We 14-15.30, LH II, Fr 10-11.30 SR THP, Cologne	<i>M. Lässig</i>
53116	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	<i>B. Maier</i>

Special BCGS Courses

53118	Physics of Surfaces and Nanostructures 2 hrs Mo 16-17.30, CR THP, Cologne	<i>T. Michely</i>
53130	Topology for Physicists II 4 hrs Mo, We 12-13.30, SR THP, Cologne	<i>M. Zirnbauer</i>
53131	Symmetries in Atomic Nuclei (Theoretical Nuclear Physics III) 2 hrs Tu 16-17.30, SR IKP, Cologne	<i>J. Jolie</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.

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

Seminars

53401	Advanced Seminar on Applications of the Nuclear Shell-Model 2 hrs We 10-11.30, Lib IKP, Cologne	<i>A. Blazhev</i>
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Intensive Courses

physics719	BCGS Intensive Week (Advanced Topics in High Energy Physics): Detectors and Algorithms for High Energy Physics, Bonn October 7-11, 2013 for more information see http://www.uni-bonn.de/~etoerne/teaching/intensive-week13	<i>E. von Törne</i>
53140	 BCGS Intensive Week EXPORT (Osaka University) "Symmetry in the sub-atomic systems", Osaka, Japan; February 17-21, 2014	<i>J. Jolie, Y. Fujita et al.</i>
53141	BCGS Intensive Week: "Accelerator Mass Spectrometry: Technique and Applications" Cologne; March 31 – April 4, 2014 for more information see http://www.ikp.uni-koeln.de	<i>W. Kutschera et al.</i>

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>F. Vewinger, S. Linden, D. Meschede, M. Weitz</i>
53199	Miniforschung (Internship during semester break for advanced students), Cologne	<i>Professors and Lecturers of the Physics Institutes</i>

General Courses

physics606	Advanced Quantum Theory Mo 12-14, We 13, LH I, PI, Bonn Exercises: 2 hrs in groups	<i>B. Kubis, C. Urbach</i>
physics607	Advanced Theoretical Physics Mo 12-14, We 13, LH HISKP, Bonn Exercises: 2 hrs in groups	<i>U. Meißner, A. Rusetsky</i>
physics751	Group Theory Mo 10-12, Th 13, LH I, PI, Bonn Exercises: 2 hrs in groups	<i>S. Förste</i>
physics760	Computational Physics Tu 10-12, SR I, HISKP, Bonn Exercises: 2 hrs in groups	<i>C. Urbach, B. Knippschild</i>

General Courses

physics774	Electronics for Physicists Tu 10-12, Th 12, LH, HISKP, Bonn Exercises: 1 hr in groups	<i>P.-D. Eversheim</i>
6951	Seminar on Scientific Writing We 10-12, R 0.008, Alfa, Bonn	<i>R. Izzard</i>
53080	Advanced Statistical Physics 4 hrs Tu 14-15.30, Th 10-11.30, LH III, Exercises: 2 hrs Mo upon agreement	<i>J. Berg</i>
53082	Advanced Quantum Mechanics 4 hrs Mo 10-11.30, Tu 8-9.30, LH III, Exercises: 2 hrs We upon agreement	<i>A. Rosch</i>

Particle and Nuclear Physics

physics611	Particle Physics Tu 13, Th 8-10, SR I, HISKP, Bonn Exercises: 1 hr in groups	<i>H. Schmieden</i>
physics612	Accelerator Physics We, Th 10-12, SR I, HISKP, Bonn Exercises: 1 hr in groups included	<i>W. Hillert, R. Maier</i>
physics615	Theoretical Particle Physics Mo 16, Tu 16-18, LH I, PI, Bonn Exercises: 2 hrs in groups	<i>H.-P. Nilles</i>
physics616	Theoretical Hadron Physics We 14-17, LH, HISKP, Bonn Exercises: 2 hrs in groups	<i>C. Hanhart, S. Krewald, A. Wirzba</i>
physics711	Particle Astrophysics and Cosmology Mo 14-16, We 9, LH, IAP, Bonn Exercises: 1 hr in groups	<i>S. Böser, M. Kowalski</i>

physics715	Experiments on the Structure of Hadrons Mo 10-12, SR II, HISKP, Bonn Exercises: 1 hr in groups	<i>A. Gillitzer</i>
physics752	Superstring Theory Tu 12, Fr 13-15, LH I, PI, Bonn Exercises: 2 hrs in groups	<i>A. Klemm</i>
physics766	Physics of Higgs Bosons Tu 14-16, Fr 12, LH I, PI, Bonn Exercises: 2 hrs in groups	<i>M. Drees</i>
53104	Tools for Particle Physics 2 hrs on agreement, SR IKP, Cologne	<i>D. Gotta, S. Schadmand, H. Ströher</i>
53404	Advanced Seminar on Nuclear Physics 2 hrs We 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>
53410	Advanced Seminar on Heavy Ion Physics 2 hrs Th 14-15.30, Lib IKP, Cologne	<i>P. Reiter</i>
53411	Advanced Seminar on Accelerator Mass Spectrometry: Methods and Applications 2 hrs Th 12-13.30, SR IKP, Cologne	<i>A. Dewald</i>

Astronomy and Astrophysics

astro801	Introduction to Astrophysics Details to be announced, Bonn	<i>U. Klein</i>
astro811	Stars and stellar evolution Th 9-11, R 0.012, AlfA, Fr 9, Cip-Pool, AlfA, Exercises: 2 hrs in groups	<i>R. Izzard, N. Langer</i>
astro812	Cosmology Tu 10-13, R 0.012, AlfA, Bonn Exercises: 1 hr in groups	<i>C. Porciani, P. Schneider</i>

Astronomy and Astrophysics

astro841	Radio astronomy: tools, applications and impacts Tu 16, Th 16-18, R 0.012, AlfA, Bonn Exercises arranged by appointment	<i>U. Klein</i>
astro8503	Dark matter and dark energy explored by radio and x-ray observations Fr 13-15, R 0.008, AlfA, Bonn Exercises/lab course arranged by appointment	<i>J. Kerp, T. Reiprich, Y. Zhang</i>
astro853	The physics of the dense stellar systems Mo 15-17, R 3.010, AlfA, Bonn	<i>P. Kroupa</i>
astro854	Numerical gravitational dynamics Th 14-16, R 0.006, AlfA, Bonn Exercises arranged by appointment	<i>J. Pflamm-Altenburg</i>
astro856	Quasars and microquasars Th 13-15, R 0.01, MPIfR, Bonn	<i>M. Massi</i>
astro857	Star formation We 10-12, R 0.006, AlfA, Bonn Exercises: 1 hr in groups	<i>F. Bertoldi</i>
astro891	Seminar on cosmology Tu 14-16, R 3.010, AlfA, Bonn initial meeting see astro 894	<i>C. Porciani, T. Reiprich, P. Schneider</i>
astro892	Seminar on radio astronomy Th 14-15, R 0.012, AlfA, Bonn initial meeting see astro 894	<i>F. Bertoldi, J. Kerp, U. Klein, M. Kramer, M. Massi, K. Menten</i>
astro893	Seminar on stars, stellar systems, and galaxies Tu 16-18, R 3.010, AlfA, Bonn initial meeting see astro 894	<i>R. Izzard, P. Kroupa, J. Pflamm-Altenburg</i>
astro894	Seminar on astronomy and astrophysics Mo 14-15.30, R 0.008, AlfA, Bonn	<i>F. Bertoldi, J. Kerp, U. Klein, M. Kramer, N. Langer, M. Massi, K. Menten, C. Porciani, T. Reiprich, P. Schneider</i>

6952	Seminar on theoretical dynamics Fr 14-16, R 3.010, AlfA, Bonn	<i>P. Kroupa, J. Pflamm-Altenburg</i>
6953	Seminar on stellar evolution and hydrodynamics Th 13.30-15, R 3.010, AlfA, Bonn	<i>J. Braithwaite, R. Izzard, N. Langer</i>
6954	Seminar on galaxy clusters Th 15-16.30, R 0.008, AlfA, Bonn	<i>T. Reiprich, Y. Zhang</i>
6955	Seminar on selected problems in extragalactic astronomy and cosmology Th 16-18, R 3.010, AlfA, Bonn	<i>C. Porciani, P. Schneider</i>
6964	Seminar on technical and computational aspects of astronomy Fr 9.45-10.45, R 3.010, AlfA, Bonn	<i>R. Izzard</i>
physics711	Particle Astrophysics and Cosmology Mo 14-16, We 9, LH, IAP, Bonn Exercises: 1 hr in groups	<i>S. Böser, M. Kowalski</i>
53112	Relativity and Cosmology I 4 hrs Mo 16-17.30, We 10-11.30, SR THP, Exercises: 2 hrs Th 14-15.30, SR II. PI, Cologne	<i>C. Kiefer</i>
53122	Star formation 2 hrs Mo 8-10, CR THP, Cologne	<i>S. Pfalzner</i>
53126	Astrophysics II 4 hrs We 12-13.30, Fr 16-17.30, SR I. PI, Cologne Exercises: 1 hr Tu 16-17.30 on agreement	<i>P. Schilke</i>
53128	Molecular Physics I 3 hrs Tu 12-13.30, Fr 8, SR I. PI, Problem Class: 1 hr Fr 9 SR I. PI, Cologne	<i>S. Schlemmer</i>
53132	Experiments in Molecular Physics 2 hrs Fr 10-11.30, SR I. PI, Cologne	<i>S. Schlemmer</i>
53133	Galaxy Dynamics 2 hrs We 10-11.30, SR I. PI, Exercises: 1 hr Th 13, SR THP, Cologne	<i>A. Eckart</i>

53405	Advanced Seminar on Topical Subjects of Astrophysics 2 hrs Mo 14-15.30, SR I, PI, Cologne	<i>A. Eckart, L. Labadie, P. Schilke, S. Schlemmer, J. Stutzki</i>
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53407	Advanced Seminar on Relativity and Cosmology 2 hrs Tu 10-11.30, SR THP, Cologne	<i>C. Kiefer</i>
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Condensed Matter and Statistical Physics, Photonics

physics613	Condensed Matter Physics We 10-12, Fr 9, LH, IAP, Bonn Exercises: 1 hr in groups	<i>N.N.</i>
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physics617	Theoretical Condensed Matter Physics Mo 15, Tu 14-16, LH, HISKP, Bonn Exercises: 2 hrs in groups	<i>C. Kollath</i>
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physics740	Hands-on Seminar: Experimental Optics and Atomic Physics Mo 9-11, IAP, Bonn	<i>M. Weitz and co-workers</i>
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physics767	Computational Methods in Condensed Matter Theory Tu 13, Th 14-16, SR II, HISKP, Bonn Exercises: 2 hrs in groups	<i>H. Monien</i>
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physics772	Physics in Medicine I: Fundamentals of Analyzing Biomedical Signals Mo 10-12, We 12, SR I, HISKP, Bonn Exercises: 1 hr in groups	<i>K. Lehnertz</i>
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physics652	Seminar on Advanced Topics in Photonics and Quantum Optics Fr 10-12, LH, IAP, Bonn	<i>F. Vewinger</i>
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physics655	Seminar on Selected Topics in Environmental Physics Th 14-16, SR I, HISKP, Bonn	<i>B. Diekmann</i>
physics656	Computational Physics Seminar on Analyzing Biomedical Signals Mo 14-16, SR I, HISKP, Bonn	<i>K. Lehnertz, B. Metsch</i>
53100	Condensed Matter Physics I 3 hrs Tu 10-11.30, Th 12-13.30, SR II. PI, Cologne Exercises: 1 hr in groups included	<i>M. Braden</i>
53108	The Fokker-Planck-Equation: Selected Problems 2 hrs Mo 17.45-19.15, CR THP, Cologne	<i>M. Janßen, J. Hajdu</i>
53120	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 I. PI, Cologne	<i>T. Quella</i>
53124	High Temperature Superconductors 2 hrs Fr 14-15.30, SR II. PI, Cologne	<i>J. Röhrer</i>
53128	Molecular Physics I 3 hrs Tu 12-13.30, Fr 8, SR I. PI, Problem Class: 1 hr Fr 9 SR I. PI, Cologne	<i>S. Schlemmer</i>
53132	Experiments in Molecular Physics 2 hrs Fr 10-11.30, SR I. PI, Cologne	<i>S. Schlemmer</i>
53142	Computing Solids: Models, Ab-initio Methods and Supercomputing 45th IFF-Spring School, 10-21 March 2014 see: http://www.iff-springschool.de	<i>P.S. Bechthold, C. Buchal, D.E. Bürgler, G. Gompper, R. Wördenweber</i>
53402	Advanced Seminar on Current Problems in Solid State Physics: "Solids with 2-dimensional physical properties" 2 hrs Mo 14-15.30, SR II. PI, Cologne First meeting: Mo 14.10.2013, 14 h see: http://www.ph2.uni-koeln.de/235.html	<i>M. Braden, M. Grüninger, P. van Loosdrecht, T. Michely, J. Hemberger, T. Lorenz</i>

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 11th, 2013
Wolfgang-Paul Hörsaal,
Kreuzbergweg 28 in 53115 Bonn

The colloquium talk will be given at 16 h by
Professor Helmut Rauch (Vienna University of Technology) on
“Neutrons as quantum objects: manipulation and storage”.

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

Please note that the colloquium talk is also part of the “Wolfgang
Paul Symposium”, which is held in Bonn on the occasion of Wolf-
gang Paul’s 100th birthday this year.



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