

Swiss Doctoral Program in Mathematics

Universities of Basel, Bern, Fribourg, Geneva, Neuchâtel, and EPF Lausanne

Annual Report Academic Year 2009/10

This report contains information on the **Swiss Doctoral Program in Mathematics**. It covers the period of the academic year 2009/10, with a preview of the following academic year. To benefit from the hyperlinks, please use the online version on **www.math.ch/dp**.

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Welcome

Under the label **Swiss Doctoral Program in Mathematics** the departments and institutes of mathematics at the Universities of [Basel](#), [Bern](#), [Fribourg](#), [Geneva](#) and [Neuchâtel](#), and [EPF Lausanne](#) offer a joint program for doctoral students in mathematics. The program is open to all doctoral students at the mentioned universities and aims to provide a comprehensive spectrum of research and training activities.

By completing the *Swiss Doctoral Program in Mathematics* doctoral students will be provided, in addition to the doctoral degree from the participating university, with a **certificate** of the *Doctoral Program*.

The graduate students are attached to the universities where they are enrolled. In particular, master's and doctoral degrees are issued by the participating universities and are outside the competence of the *Doctoral Program*.

The *Swiss Doctoral Program in Mathematics* consists of participating faculty, graduate students enrolled in the *Doctoral Program*, and post-docs. Participation is voluntary. The *Doctoral Program* permits doctoral students to validate their engagement and to profit from the offers and benefits of the program.

The *Swiss Doctoral Program in Mathematics* was founded in 2006. In a pilot phase till 2008 it was running together with the pre-existing [Ecole doctorale de mathématiques Genève - Neuchâtel](#). In 2009, the *Swiss Doctoral Program in Mathematics* had a common budget with the *Troisième cycle Romand de mathématiques* and was fully supported by the [CUSO](#).

On January 1, 2010, the Doctoral Program merged with the *Troisième cycle Romand de mathématiques* and runs now under the official label **Programme doctoral en mathématiques de la CUSO**. Please see the [archive](#) for the history of the *Troisième cycle*.

Swiss Doctoral Program in Mathematics

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Objectives

The aim of the *Swiss Doctoral Program in Mathematics* is to offer an advanced research training in mathematics of high quality and to prepare doctoral students for their future career.

The *Doctoral Program* provides a broad platform for contacts among the mathematical research groups in Switzerland. The synergistic effect initiated by the joint activities represents a major added value complementing the research activities of the participating universities.

The *Swiss Doctoral Program in Mathematics* covers the three following parts:

Education towards research: In a joint effort of the participating research groups at the departments of mathematics at the involved universities the *Doctoral Program* offers an intensive and broad graduate education in mathematics of international format. The program consists of a wide range of graduate courses and research seminars, summer and winter schools. Moreover, special programs are launched that include block-courses given by internationally recognized speakers, and sequences of lectures focusing on recent developments. The program comprises both, activities that provide a good general mathematical background and specialized topics which are related to the research interests of groups of doctoral students. The learning outcome of the doctoral program is the ability to do independent original research in mathematics.

Information: The *Doctoral Program* offers a platform of information about research activities, conferences, the mathematical community, and exchange programs. It also provides information about job opportunities and continuing education.

Career management: The *Doctoral Program* addresses the issue of the professional integration of doctoral students. It serves as a platform to establish contacts with doctoral students of other research groups in Switzerland and offers a challenging and stimulating atmosphere so as to provide young researchers with an excellent base for a professional or research career in mathematics. The offer includes the program of [Transferable skills](#) of the CUSO.

Support: The *Doctoral Program* grants travel support to doctoral students who participate (actively) in conferences or other scientific activities abroad. Requests are to be submitted to the [Director](#), with a recommendation of the PhD advisor and a local [senior member of the council](#).

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Neighboring Schools

The *Swiss Doctoral Program in Mathematics* collaborates with

- [The Zurich Graduate School in Mathematics](#)
- [Ecole doctoral de l'EPFL](#)

Reciprocity agreement between the Zurich Graduate School in Mathematics and the Swiss Doctoral Program in Mathematics:

PhD Students which are enrolled in either school are entitled to participate in activities of the other school. A request for reimbursement of travel or other costs can only be filed with the own school according to its rules.

A similar agreement with the *Ecole doctoral de l'EPFL* is currently under negotiation.

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Spectrum of Activities

The *Doctoral Program*

- offers courses in all areas of mathematics at graduate and research level,
- organizes workshops and block-courses in which experts present advanced topics and work with the doctoral students,
- organizes workshops and seminars where the doctoral students present in an accessible way the context and the progress of their own research in a talk or by a poster,
- encourages doctoral students to participate actively in international conferences,
- proposes complementary training in scientific English, computer science, scientific writing and presentation technique,
- prepares and stimulates the transition of the doctoral students to the professional life in industry, administration or in academia,
- sets up a network of information relevant to doctoral students for succeeding in their thesis and in their career planning.

Activities of the *Doctoral Program* include the following events primarily targeted at the graduate student audience:

- **Graduate courses:** in general, these are special courses at the graduate level given over the period of one semester, or more concentrated courses having around 20 teaching hours. Graduate courses have a flexible format: they can be given by one or several teachers, and they can be offered once a week or they can be organized in intensive modules dispatched over one-week periods.
- **Summer/Winter Programs:** these are one-week events which bring together graduate students and leading experts in their respective fields. Typically, the invited speakers present several mini-courses, and there is a possibility for informal discussions with graduate students.
- **Graduate Colloquium:** this is an opportunity for graduate students to present their own work in front of a friendly audience. Such events can be organized in particular topics, as well as at the interdisciplinary level (between different fields of mathematics).
- **Other Events** can be organized at the request of the members of the *Doctoral Program*, if the committee finds them suitable.

Every year, the *Doctoral Program* organizes a [list of events](#) where doctoral students are encouraged to participate and to [earn credits](#). Each event is assigned a certain number of credits depending on its length and content.

Below we list more particular targets of the *Doctoral Program* which are not currently covered by the *3e Cycle Romand*:

- To offer a choice of advanced graduate courses in various fields of mathematics (similar to American graduate schools). These courses will be addressed to graduate students in the beginning of their studies. The main purpose is to provide an up to date background in the major fields of mathematics to the graduate students participating in the *Doctoral Program*.
- To organize two-day meetings within the Graduate Colloquium. These meetings will give an opportunity to doctoral students to present their research area to other doctoral students and their results to experts in the respective fields.
- To organize Summer/Winter Schools in case the offer of such schools is not sufficient. The topic can vary and it will be chosen according to the research topics of graduate students participating in the *Doctoral Program*.

On a smaller scale, the *Doctoral Program* addresses the issues of marketing of scientific research and of the professional integration of doctoral students. In particular, the following issues should be touched upon in the format of lectures or workshops:

- How to write articles in mathematics (what is an introduction, how to compose the bibliography etc.)?
- How to make a presentation (in particular, in English)?
- How to use a computer in mathematical research?
- How to write a CV, and how to prepare a job interview?

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Responsibilities

The activities of the *Doctoral Program* are planned by the **Council** and directed by the **Committee**. The **Secretary** takes care of the accounting and registers the students achievements.

The *Council* is composed of **two faculty members** and **one PhD student (plus a substitute)** from each university participating in the *Doctoral Program*. The Director of the *Ecole doctorale de l'EPFL* is a permanent invitee in the *Council*.

The responsibilities of the *Council* are as follows:

- To plan activities of the *Doctoral Program* and to coordinate the activities with other graduate schools. The program of activities is prepared and announced for each academic year.
- To elect the *Committee* among its members.

The *Council* can delegate part of its responsibilities to the *Committee* who runs the activities of the *Doctoral Program* in the periods between the meetings of the *Council*.

The *Committee* is composed of a **Director**, a **Vice Director**, and a **PhD student**. The Directors are faculty members.

The responsibilities of the *Committee* are as follows:

- To distribute the budget of the *Doctoral Program* between different activities.
- To approve applications of graduate students for entering the *Doctoral Program* and for participation in various activities.
- To assign credits to graduate students for successful participation in the activities of the *Doctoral Program* or in other activities in mathematics at the graduate level.

Faculty members of participating institutions are entitled and invited to [submit proposals](#) to the *Doctoral Program Committee*.

Swiss Doctoral Program in Mathematics

Universities of Basel, Bern, Fribourg, Geneva, Neuchâtel, and EPF Lausanne

Committee

Director

[Bruno Colbois](#)

Institut de Mathématiques
Université de Neuchâtel
Rue Emile Argand 11
Case postale 158
CH-2009 Neuchâtel (Switzerland)
Phone ++41 (0)32 718 28 08
Fax ++41 (0)32 718 28 01
e-mail bruno.colbois@unine.ch



Vice Director

[Marc Troyanov](#)

IGAT-Institut de Géométrie, d'Algèbre et de
Topologie
Bâtiment BCH
EPFL
CH-1015 Lausanne (Switzerland)
Phone ++41 (0)21 693 54 21
Fax ++41 (0)21 693 03 85
e-mail marc.troyanov@epfl.ch



PhD Student Representative

[Claudio Somaini](#)

University of Bern

Former Directors

- 2006-2010: [Norbert Hungerbühler](#) (founding director)

Swiss Doctoral Program in Mathematics

Universities of Basel, Bern, Fribourg, Geneva, Neuchâtel, and EPF Lausanne

Senior Council Members

University	Council Members	
Basel	Hanspeter Kraft	NN
Bern	Sebastian Baader	George Metcalfe
Fribourg	Anand Dessai	Ruth Kellerhals
Geneva	Anton Alekseev	Andras Szenes
Neuchâtel	Bruno Colbois*	Alain Valette
EPF Lausanne	Eva Bayer	Marc Troyanov**
Ecole doctoral EPFL	Friedrich Eisenbrand***	

*Director and **Vice Director of the *Doctoral Program*

***Director of the *Ecole doctorale de l'EPFL* (permanent invitee)

Junior Council Members

University	Council Member	Substitute
Basel	Immanuel Stampfli	NN
Bern	Claudio Somaini	NN
Fribourg	Thomas Mettler	Florence Yerly
Geneva	David Albertani	NN
Neuchâtel	Grégory Roth	Kolawolé Atchade
EPF Lausanne	Caroline Lassueur	Laura Vinckenbosh Daniel Arnold Moldovan

Swiss Doctoral Program in Mathematics

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Secretary

Our Secretary takes care of the accounting and registers the students achievements.

Accounting

[Claudia Kolly](#)

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Chemin du Musée 23
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Enrollment: General

The participation in the *Doctoral Program* is voluntary for both, faculty and doctoral students. However it is recommended. All doctoral students of the participating universities and all faculty members and post-docs have access to the activities of the *Doctoral Program* and are invited to participate actively. Enrolled doctoral students are entitled to [apply for refund of costs](#) for the successful participation in activities of the *Doctoral Program* and for travel grants (see [Support](#)).

Enrollment of a doctoral student in the *Doctoral Program* ends with the conferral of the doctorate and is limited to five years. Participating doctoral students are usually employed as assistants at one of the affiliated universities or hold a scholarship of the National Science Foundation or of other sources.

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Scoring

The participation of a doctoral student in the *Doctoral Program* is validated by ECTS points. A doctoral student must acquire a minimum of **30 ECTS points** to be entitled to receive the certificate of the *Doctoral Program*. A doctoral student can earn credit points as follows:

1. By following and validating a course which is approved by the *Doctoral Program* (3 ECTS points)
2. By participating and validating a workshop, block-course or conference approved by the *Doctoral Program* (3 ECTS points)
3. By presenting the context and the progress of the own research within the framework of a colloquium (3 ECTS points)
4. By presenting a scientific topic different from the own research within the framework of a colloquium (3 ECTS points)
5. By participating in a complementary training in scientific English, computer science, scientific writing or presentation technique, or by organizing a scientific activity within the framework of the *Doctoral Program* (1 ECTS = 25 hours of work)
6. For a doctoral student working as an assistant, a maximum of 6 ECTS points can be obtained by fulfilling his teaching obligations. This maximum corresponds to the teaching load of a half-time assistant during four years.

A minimum of 9 ECTS points must be acquired in the first category, and at least 6 ECTS points in each of the categories 2 and 3.

Each doctoral student is guided by an advisor, usually a professor of one of the affiliated universities. Of course, *thèses en co-tutelle* and co-direction of a thesis is possible. The doctoral student develops a research activity and is supposed to obtain results that lead to the granting of a doctorate at the respective university.

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Application of Students

A PhD student in mathematics at one of the affiliated universities can enroll for the *Doctoral Program* by filling the following form. A confirmation is sent by e-mail to the applicant and his or her thesis advisor.

<input type="text"/>	Name *
<input type="text"/>	First name *
<input type="text"/>	University *
<input type="text"/>	E-Mail *
<input type="text"/>	Homepage
<input type="text"/>	Thesis advisor
*	
<input type="text"/>	E-Mail of
thesis advisor *	
$e^{i\pi} + 1 =$ <input type="text"/>	please enter the result to prove that you are not a robot.
<input type="submit" value="Submit"/>	

* = required fields

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Registration research groups

Professors and lecturers of the affiliated universities can register with the *Swiss Doctoral Program in Mathematics*. By doing so, your name, research group and area will be listed on the [member's page](#) of the *Doctoral Program*. This promotes your research and makes your group attractive for young PhD students, and you express your support to the *Doctoral Program*. A confirmation of your registration is sent by e-mail.

<input type="text"/>	Name *
<input type="text"/>	First name *
<input type="text"/>	University *
<input type="text"/>	E-Mail *
<input type="text"/>	Homepage
<input type="text"/>	Research field(s) *
$e^{i\pi} + 1 =$ <input type="text"/> please enter the result to prove that you are not a robot.	
<input type="submit" value="Submit"/>	

* = required fields

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Validation

Doctoral students who are registered with the *Swiss Doctoral Program in Mathematics* can validate an activity by sending the validation form to the [Secretary](#) of the program.

Download the [validation form](#).

To earn the credits one needs to satisfy certain criteria, e.g. to pass a test/exam for graduate courses, to give a talk at the Graduate Colloquium, or to take an active part in a Summer/Winter School etc. Upon prior request, the [Director](#) of the *Doctoral Program* can accept credits earned in the activities organised by [other graduate schools in mathematics](#) or other institutions.

Upon reception and verification of the form, the ECTS points associated with the activity are credited to the student's account.

Please attach the [reimbursement form](#) in case you apply for refund of costs. And please keep a copy of the form with your records.

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Validation Form

I have participated in the following activity of the *Doctoral Program*:

Title:

.....

Date:

My name:

Course instructor:

I would like to credit the ECTS points associated with this activity for the following category (see below for the list of categories).

1

2

3

4

5

6

Signatures

PhD student:

Course instructor:

Thesis advisor:

Scoring rules: The participation of a doctoral student in the *Doctoral Program* is validated by ECTS points. A doctoral student must acquire a minimum of 30 ECTS points to be entitled to receive the certificate of the *Doctoral Program*. A doctoral student can earn credit points as follows:

1. By following and validating a course which is approved by the *Doctoral Program* (3 ECTS points).
2. By participating and validating a workshop, block-course or conference approved by the *Doctoral Program* (3 ECTS points),
3. By presenting the context and the progress of the own research within the framework of a colloquium (3 ECTS points).
4. By presenting a scientific topic different from the own research within the framework of a colloquium (3 ECTS points).
5. By participating in a complementary training in scientific English, computer science, scientific writing or presentation technique, or by organizing a scientific activity within the framework of the *Doctoral Program* (1 ECTS point = 25 hours of work).
6. For a doctoral student working as an assistant, a maximum of 6 ECTS points can be obtained by fulfilling his or her teaching obligations. This maximum corresponds to the teaching load of a half-time assistant during four years.

A minimum of 9 ECTS points must be acquired in the first category, and at least 6 ECTS points in each of the categories 2 and 3.

Please send this form to the Secretary of the program: www.math.ch/dp/committee/doctoral-students

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Reimbursement

Doctoral students who are registered with the *Swiss Doctoral Program in Mathematics* can apply for reimbursement of travel costs connected to the participation and [validation](#) of an activity of the *Doctoral Program* by sending the reimbursement form to the [Secretary](#) of the program.

Please send the form, including original receipts, before December 10th of each year. Download the [reimbursement form](#) (only valid if attached to the [validation form](#) for the same activity).

Consider the following guidelines:

- [Guidelines for reimbursement](#)
- [Summary of the management directive of the CUSO](#)

Please observe that for validation and reimbursement of external activities which are not listed on the program of the *Swiss Doctoral Program in Mathematics* the procedure for [Support](#) applies.

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Reporting

The progress of graduate students within the *Doctoral Program* is evaluated each year by the *Doctoral Program Committee* or the *Director* on the basis of the credits obtained by doctoral students. The *Doctoral Program* works in close contact with the thesis advisors of the graduate students. In particular, the progress evaluation is communicated to the thesis advisors.

Doctoral students submit **yearly a report** documenting their activities related to the *Doctoral Program*. They can include a summary of their research results. The report is to be sent at the end of the academic year to the [Director](#) of the program.

Upon conferral of your doctorate please send a notice to the same address with your postal address. You will then receive your **certificate** of the *Doctoral Program*.

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Program of the academic year 2009/2010

Link to the program of the academic year [2006/2007](#), [2007/2008](#), [2008/2009](#).

Please consider also the program [Transferable skills](#) of the CUSO, and [StartingDoc](#).

COLOR CODE GUIDE

Recommended for all doctoral students

Recommended for all doctoral students working in the field

Recommended for advanced doctoral students working in the field

Graduate Course of the III Cycle: [Special topics in biomathematics](#)

Prof. [Christian Mazza](#), Prof. [Jean-Pierre Gabriel](#) (Fribourg)

Fall term 2009, Wednesdays, 11:15 - 12:30, start: September 16

Place: EPFL, room [CM 10](#)

Graduate Course of the III Cycle: [Introduction to global singularity theory](#)

Prof. [Andras Szenes](#) (Geneva)

Fall term 2009, Wednesdays, 14:15 - 15:30, start: September 16

Place: EPFL, room [MA A1 12](#)

Graduate Course of the III Cycle: [Numerical ranges of matrices and linear operators](#)

Prof. [Christiane Tretter](#) (Bern)

Fall term 2009, Wednesdays, 15:45 - 17:00, start: September 16

Place: EPFL, room [MA A1 12](#)

Séance d'information pour doctorant-e-s

September 21, 2009, University of Geneva

12.15 to 14.00, room S130 Uni Mail

Organization: Eliane.Barth@unige.ch

Workshop and mini-courses: [Invariant Hilbert Schemes and Wonderful Varieties](#)

September 28-30, 2009, Basel

Research talks by young researchers in the field are complemented by two mini-courses taught by M. Brion and D. Luna aimed at students working in the field of the theory of Algebraic Groups and in Algebraic Geometry.

Organization: [Jonas Budmiger](#)

Michel Plancherel Lecture 2009

Stephan Stolz (University of Notre Dame / MPI Bonn):
Field theories and modular functions

November 2, 17:15

University of Fribourg Pérolles, Lecture Room 0.110, Biology Building

Mini Course by N. Th. Varopoulos: **Le Problème de Dirichlet discret et classique dans des domaines Lipschitziens**

University of Geneva, November and December 2009

First meeting: Tuesday, 3 November, 13:15, room 623, Section de Mathématiques, rue du Lièvre, 2-4.

Organization: [Yvan Velenik](#) (Geneva)

Symposium: **Trends in Essential Dimension**

December 17, 2009, Basel

This symposium is intended for mathematicians interested in the fields of group theory, representation theory, algebraic groups, algebraic geometry, quadratic forms, central simple algebras, invariant theory, moduli spaces and related topics, the unifying theme being the notion of [essential dimension](#). The symposium focuses on trends and new techniques in essential dimension.

Organization: [Giordano Favi](#) and [Roland Lötscher](#)

Mini Course: **Schrödinger operators: Resonances arising from a perturbed eigenvalue**

Arne Jensen (Aalborg University, Denmark)

EPFL - CIB, January 11 - February 26, 2010

Organization: [Christiane Tretter](#) (Bern)

Séminaire Borel: **Winter School in Mathematical Physics**

Les Diablerets, January 31 to February 5, 2010

Organization: [Anton Alekseev](#), [Andras Szenes](#) (Geneva)

Mini course: **Numerical integration of stochastic differential equations**

Des Higham (University of Strathclyde, Glasgow)

Basel, February 11-13, 2010

Organization: [David Cohen](#)

Sixth Graduate Colloquium

February 11-12, 2010, Geneva

Organization: [David Albertani](#)

Mini course: **Plongement des espaces métriques et applications**

Florent Baudier, Neuchâtel

Dates: February 24, March 3, 17, 24 and 31, 2010

Time: 14-17

Place: Salle B217, Institut de Mathématiques, Université de Neuchâtel, 11 Rue Emile Argand

Seminar: **Geometry and Dynamics in Negative Curvature**

Neuchâtel, begin: February 25, 2010

Organization: [Bruno Colbois](#), [Felix Schlenk](#) (Neuchâtel)

Journée Georges de Rham

Luigi Ambrosio (Scuola Normale Superiore di Pisa) and **Alexander Bobenko** (Technische Universität Berlin)

March 10, 2010, EPF Lausanne

Organizer: [Marc Troyanov](#) (EPFL)

Séminaire Kervaire: **Geometry, Topology and Computation in Groups**

Les Diablerets, March 7-12, 2010

Organization: [Laura Ciobanu](#) (Fribourg), [Tatiana Smirnova-Nagnibeda](#) (Geneva)

Mini Course: **Low eigenvalues of the Laplacian (analysis, geometry and numerics)**

Pedro Freitas (Universidade Técnica de Lisboa and Universidade de Lisboa)

Date: March 15, 2010

Time: from 14h to 16h

Place: Salle B217, Institut de Mathématiques, Université de Neuchâtel, 11 Rue Emile Argand

Mini Course: **Random Schrödinger operators**

Peter Hislop (University of Kentucky) and **Frédéric Klopp** (Université de Paris 13)

EPFL - CIB, May 17 - May 30, 2010

Organization: [Christiane Tretter](#) (Bern)

Mini Course: **Foncteurs associées aux bi-ensembles**

EPFL, June 25 and 28-30, 2010

Organization: [Donna Testerman](#), [Jacques Thévenaz](#) (EPFL)

Mini course: [La structure des \$p\$ -groupes finis et la théorie des représentations](#)

EPFL, June 25 and 28-30, 2010

Organization: [Donna Testerman](#), [Jacques Thévenaz](#) (EPFL)

Colloquium: [Group representation theory and related topics](#)

EPFL, June 22-25, 2010

Organization: [Donna Testerman](#) (EPFL)

Graduate Course of the III Cycle: [Autour des problèmes de Linnik](#)

Prof. [Philippe Michel](#) (EPFL)

Fall term 2010, Wednesdays, 11:15 - 12:30, beginning: September 22.

Place: EPFL

Graduate Course of the III Cycle: [Homologie de Floer et applications](#)

Prof. [Felix Schlenk](#) (Neuchâtel)

Fall term 2010, Wednesdays, 14:15 - 15:30, beginning: September 22.

Place: EPFL

Graduate Course of the III Cycle: [Introduction to complex analysis in several variables](#)

Prof. [Frank Kutzschebauch](#) (Bern)

Fall term 2010, Wednesdays, 15:45 - 17:00, beginning: September 22.

Place: EPFL

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Journée Georges de Rham

The *Journée Georges de Rham* has been introduced in 1991 by the *Troisième cycle Romand de mathématiques* and usually takes place at EPF Lausanne. It convenes mathematicians not only of the CUSO universities, but also from the whole of Switzerland and from abroad and stimulates interaction between professors, postdocs and PhD students. The organisers invite two speakers of international reputation who present their vision of contemporary mathematics and of future developments. A particular aim is to offer doctoral students a modern high class perspective of mathematical sciences and to establish contacts on an international level and with other research groups.

- 2010 **Luigi Ambrosio** (Scuola Normale Superiore di Pisa)
Surface measures in Euclidean spaces, Carnot groups and Wiener space
Alexander Bobenko (Technische Universität Berlin)
Discrete Differential Geometry: Theory and Applications
- 2009 **Curtis McMullen** (Harvard University)
Billiards and moduli space
Peter Sarnak (Princeton University)
The affine linear sieve
- 2008 **Jean-Christophe Yoccoz** (Collège de France)
Dynamique et Géométrie des échanges d'intervalles
Gang Tian (Princeton University)
Geometry and Analysis of low dimensional Manifolds
- 2007 **László Lovász** (Microsoft research USA)
The limit of a growing graph sequence
Benoît Mandelbrot (Yale, USA)
Fractales et multifractales : survol et quelques résultats récents
- 2006 **Jean-Pierre Serre** (Collège de France)
Le "nombre de points mod m " d'une variété algébrique
Akshay Venkatesh (MIT)
 p -adic dynamics and representations by quadratic forms
- 2005 **Morris Hirsch** (UC Berkeley)
Actions of Lie algebras and Lie groups on surfaces
Benjamin Weiss (University of Jerusalem)
Recent developments in the ergodic theory of amenable

group actions

- 2004 **Marcus du Sautoy** (Oxford)
Through the looking glass: groups from a number theoretic perspective
Robert Ghrist (Urbana-Champaign)
Knotted Flowlines
- 2003 **Martin R. Bridson** (Imperial College London)
The geometry of the word problem
Marcel Berger (IHES)
Dynamiser la géométrie élémentaire : introduction aux travaux de Richard Schwartz
- 2002 **Valentin Poénaru** (Université Paris-Sud, Orsay)
Problèmes de Topologie en petite dimension
John Milnor (SUNY at Stony Brook)
Is there a science of complexity?
- 2001 **Antonio Ambrosetti** (SISSA, Trieste)
Perturbation in critical point theory and applications to nonlinear differential equations
Stuart Antman (University of Maryland at College Park)
Analytic consequences of incompressibility in mechanics
- 2000 **Jean Bellissard** (Université Paul Sabatier, Toulouse)
La géométrie non commutative des solides apériodiques
Etienne Ghys (Ecole Normale Supérieure, Lyon)
La structure des feuilletages holomorphes
- 1999 **Jürg Fröhlich** (ETH Zürich)
Supersymmetry and Differential Geometry
Daniel Sternheimer (Université de Dijon)
La cohomologie de de Rham des variétés symplectiques : un classifiant des quantifications
- 1998 **Dieter Kotschick** (Universität München)
Signatures, monopoles and mapping class groups
Michel Brion (Université de Grenoble I)
Formule sommatoire d'Euler MacLaurin pour les polytopes convexes rationnels
- 1997 **Shahar Mozes** (Hebrew University)
Products of trees, lattices and simple groups
Gilles Pisier (Texas A&M University)
Problèmes de similarité et applications complètement bornées
- 1996 **Rémi Langevin** (Université de Bourgogne)
Géométrie intégrale
Ian Hambleton (McMaster University)
Topological equivalence of linear representations

- 1994 **Michèle Audin** (Université de Strasbourg)
Matrice de Jacobi
Jean-Benoit Bost (IHES)
Courants de Green et géométrie arithmétique
- 1993 **Jean-Pierre Demailly** (Grenoble)
Méthodes analytiques récentes et géométrie algébrique
Vaughan Jones (Berkeley and Geneva)
Groupes de lacets et algèbres d'opérateurs
- 1992 **Jacques Tits** (Collège de France)
Peter Hilton (Binghamton University)
- 1991 **Alain Connes** (IHES, Paris)
La notion d'espace géométrique et le modèle standard
Raoul Bott (Harvard)
Aspects of torsion: old and new

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Recommended external Activities

- [Zurich Graduate School in Mathematics](#)
- [Ecole doctoral de l'EPFL](#)

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Advanced Courses 2009/10

Specific courses which are held in the framework of a master program are also qualified for PhD students. Such courses can be announced on this page using the usual [form](#) and are thereby open for all PhD students participating in the Doctoral Program. In order to minimize travelling, it is recommended to organize such courses in a bi-weekly rhythm or as block courses.

Link to the advanced courses of the academic year [2006/2007](#), [2007/2008](#), [2008/2009](#).

Course: Partial differential equations in mathematical physics

Prof. Norbert Hungerbühler , University of Fribourg

Academic year 2009/10

Course: Friday, 08:15-10:00, Room 410, Chemistry Building University of Fribourg, Pérolles

Course: K-Theory

Dr. Martin Jakob, University of Neuchâtel and Fribourg
--

Academic year 2009/10

Course: Monday, 15:15-17:00, Room 2.73, Physics Building University of Fribourg, Pérolles
--

Course: Spectral Methods

Dr. Richard Baltensperger, University of Fribourg, EIA-FR

Academic year 2009/10

Course: Wednesday, 10:15-12:00, Room 2.52, Physics Building University of Fribourg, Pérolles

Course: Enumerative Combinatorics
--

Dr. Paul Turner, Heriot-Watt and University of Fribourg

Fall term 2009/10

Course: Tuesday, 13:15-17:00, Room 0.101, Math II (Lonza) University of Fribourg, Pérolles

Course: Algebraic number theory

Prof. Alain Jeanneret, University of Bern

Fall term 2009/10

Course: Wednesday, 10-12, and Thursday, 14-16, B 78, ExWi
[University of Bern](#)

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Doctoral Student's Page academic year 2009/10

On this page, all Doctoral Students of the *Doctoral Program* can announce their own talks, presentations, mini-courses etc. To do so, please fill in the corresponding [form](#).

Link to the doctoral student's page of the academic year [2006/2007](#), [2007/2008](#), [2008/2009](#).

Shaula Fiorelli Vilmart (Geneva): Thesis Defense

Thursday, December 10, 2009, 16:15
Section de Mathématiques de Genève, Salle 17, 2ième étage
2-4, rue du Lièvre, 1211 Genève 4

Title: **Étude de cercles tangents à des coniques**

Grégoire Aubry (EPFL)

Lecture at the [Graduate Colloquium](#) of the Swiss Doctoral Program, Geneva
11.2.2010, 11:15: On a uniformization method for hyperelliptic Riemann surfaces

Georges Klein (Fribourg)

Lecture at the [Graduate Colloquium](#) of the Swiss Doctoral Program, Geneva
11.2.2010, 14:00: Selected topics in linear rational interpolation

Régis Houssou (Neuchâtel)

Lecture at the [Graduate Colloquium](#) of the Swiss Doctoral Program, Geneva
11.2.2010, 15:15: Credit Risk Modelling in Incomplete Market

Michel Matter (Geneva)

Lecture at the [Graduate Colloquium](#) of the Swiss Doctoral Program, Geneva
12.2.2010, 09:30: Sandpiles and avalanches

Muriel Heistercamp (Neuchâtel)

Lecture at the [Graduate Colloquium](#) of the Swiss Doctoral Program, Geneva
12.2.2010, 11:00: The Weinstein conjecture with multiplicities

Clément Hongler (Geneva)

Lecture at the [Graduate Colloquium](#) of the Swiss Doctoral Program, Geneva
12.2.2010, 13:30: The energy field in the Ising model

Caroline Lassueur (EPFL)

Lecture at the [Graduate Colloquium](#) of the Swiss Doctoral Program, Geneva
12.2.2010, 15:00: Endo-trivial Modules and Relatives

Asma Hassannezhad (Neuchâtel)

Lecture at the Seminar [Geometry and Dynamics in Negative Curvature](#),
Neuchâtel
06.5.2010: Visual Measures and barycentres

Asma Hassannezhad (Neuchâtel)

Lecture at the [Summer School in Geometric Analysis](#)
May 31 - June 4, Samos, Greece
04.6.2010: Upper bound for eigenvalue of Laplacian

Georges Klein (Fribourg)

Lecture at the [Seventh International Conference on Curves and Surfaces](#)
June 24 - 30, Avignon, France
29.6.2010: Convergence rates of derivatives of a family of barycentric
rational interpolants

Georges Klein (Fribourg)

Lecture at the [International Congress on Computational and Applied
Mathematics, ICCAM2010](#)
July 5 - 9, Leuven, Belgium
08.7.2010: Linear barycentric rational quadrature

Swiss Doctoral Program in Mathematics

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Thesis Defenses academic year 2009/10

On this page, all Doctoral Students of the *Doctoral Program* can announce their Thesis Defense. To do so, please fill in the corresponding [form](#).

Link to the list of the academic year [2006/07](#), [2007/08](#), [2008/09](#).

Vincent Emery (Fribourg): Thesis Defense

Friday, October 16, 2009, 17:00
Lecture Room 2.52, [Physics Building](#), University of [Fribourg](#), Péroilles
Chemin du musée 3, 1700 Fribourg

Title: **Du volume des quotients arithmétiques de l'espace hyperbolique**

Shaula Fiorelli Vilmart (Geneva): Thesis Defense

Thursday, December 10, 2009, 16:15
Section de Mathématiques de Genève, Salle 17, 2ième étage
2-4, rue du Lièvre, 1211 Genève 4

Title: **Étude de cercles tangents à des coniques**

Geneviève Perren (Fribourg): Thesis Defense

Friday, December 11, 2009, 17:00
Lecture Room 2.52, [Physics Building](#), University of [Fribourg](#), Péroilles
Chemin du musée 3, 1700 Fribourg

Title: **Miroirs hyperboliques**

Thomas Mettler (Fribourg): Thesis Defense

Friday, July 9, 2010, 17:30
Lecture Room C140, [Péroilles II](#), University of [Fribourg](#)
Bd de Péroilles 90, 1700 Fribourg

Title: **On the Weyl metrisability problem for projective surfaces & related topics**

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Announce an Activity

All faculty members, postdocs and doctoral students are invited to propose activities which are suitable for the *Doctoral Program* (see [Spectrum of Activities](#)). In particular, Doctoral Students can announce their own talks and presentations which are then displayed on the [Doctoral Student's Page](#).

<input type="text"/>	Name *
<input type="text"/>	First name *
<input type="text"/>	University *
<input type="text"/>	E-Mail *
Description:	
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$e^{i\pi} + 1 =$ <input type="text"/>	please enter the result to prove that you are not a robot.
<input type="submit" value="Submit"/>	

* = required fields

In case the form is not adequate, please send an e-mail with a brief description of your project to Bruno.Colbois@unine.ch.

Swiss Doctoral Program in Mathematics

Universities of Basel, Bern, Fribourg, Geneva, Neuchâtel, and EPF Lausanne

Math Departments in Switzerland



Swiss Doctoral Program in Mathematics

Universities of Basel, Bern, Fribourg, Geneva, Neuchâtel, and EPF Lausanne

Math Departments worldwide

Directories with lists of Mathematics Departments

- [Luchsinger's Worldwide Department Index](#)
- [Google Academic Math Departments](#)
- [The Penn State Math Directory](#)
- [The Florida State Math Directory](#)

Swiss Doctoral Program in Mathematics

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Mathematical Societies

Quick links

- [Swiss Mathematical Society](#)
- [DMV Deutsche Mathematiker-Vereinigung](#)
- [EMS European Mathematical Society](#)
- [AMS American Mathematical Society](#)
- [IMU International Mathematical Union](#)
- [SIAM Society for Industrial and Applied Mathematics](#)
- [LMS London Mathematical Society](#)
- [GAMM Gesellschaft für Angewandte Mathematik und Mechanik](#)
- [ÖMG Österreichische Mathematische Gesellschaft](#)
- [UMI Unione Matematica Italiana](#)
- [SMF Société Mathématique de France](#)
- [SMAI Société de Mathématiques Appliquées](#)
- [ICIAM International Council for Industrial and Applied Mathematics](#)
- [GMFH/SMHES Gesellschaft für Mathematik an den Schweizer Fachhochschulen](#)
- [VSMP/SSPMP Verein der Schweizerischen Mathematik- und Physiklehrpersonen](#)

Other directories

- [Luchsinger's Worldwide Society Index](#)
- [EMS Member Societies](#)
- [IMU Member Societies](#)
- [ICIAM Member Societies](#)

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Universities of Basel, Bern, Fribourg, Geneva, Neuchâtel, and EPF Lausanne

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To see your record, click on DATA and enter your password.

Swiss Doctoral Program in Mathematics

Universities of Basel, Bern, Fribourg, Geneva, Neuchâtel, and EPF Lausanne

Your data record

To notify an achievement or change your data, please use the [validation form](#) or send an e-mail to Bruno.Colbois@unine.ch.

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Advisor	Hanspeter Kraft
Entry date	2006-08-10

Program Achievements

Category 1: Participation in graduate courses

Graduate Course: Local Cohomology and Sheaf Cohomology

Fall term 2007, University of Zürich

Instructor: Markus Brodmann

ECTS points: 3

Reimbursement: 382.50 CHF

Graduate course: Algebraische Zahlentheorie

Fall term 2007, University of [Basel](#)

Instructor: David Masser

ECTS points: 3

Graduate course: Introduction to category theory

Spring term 2008, University of Basel

Course instructor: Giordano Favi

ECTS points: 3

Graduate course: Höhentheorie

Spring term 2008, University of Basel

Course instructor: David Masser

<i>ECTS points: 3</i>

Category 2: Participation in conferences

Summer school: Aspects of moduli theory
--

June 16 - 19, 2008, Scuola Normale Superiore di Pisa
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<i>ECTS points: 3</i>

Workshop: Representation Theory Days in Zurich

Zurich, November 27 - 29, 2008

Course instructor: Karin Baur

<i>ECTS points: 3</i>

Category 3: Presentation of own research results

Jonas Budmiger (Basel)

Lecture at the Graduate Colloquium of the Swiss Doctoral Program, Bern 24.1.2008, 16:00: An Example of an SL_2 -Hilbert Scheme

<i>ECTS points: 3</i>

Jonas Budmiger (Basel)

Lecture at the Fifth Graduate Colloquium of the Swiss Doctoral Program, Fribourg 29.1.2009, 11:15: From Moduli Spaces to Invariant Hilbert Schemes
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<i>ECTS points: 3</i>

Category 5: Complementary scientific training

Second Graduate Colloquium

May 29 - 30, 2007, Basel

Organization: Jonas Budmiger , Philipp Habegger

<i>ECTS points: 3</i>

Category 6: Work as assistant

Teaching, tutoring, administration

Mathematics Institute, University of Basel

ECTS points: 6

Prizes

Third Graduate Colloquium

January 24-25, 2008, Bern

Jonas Budmiger: Birkhäuser Prize for the Best Talk

Summary

Category	Required	Attained
1	9	12
2	6	6
3	6	6
4		0
5		3
6		6
<i>Total</i>	<i>30</i>	<i>33</i>
Total reimbursement		
<i>382.5 CHF</i>		

Swiss Doctoral Program in Mathematics

Universities of Basel, Bern, Fribourg, Geneva, Neuchâtel, and EPF Lausanne

Research Groups

Professor	University	Field
Michel Benaïm	Neuchâtel	Probability
Bruno Colbois	Neuchâtel	Riemannian geometry, metric geometry
Alain Valette	Neuchâtel	Analysis on groups (group algebras, harmonic analysis, geometric group theory)
Anand Dessai	Fribourg	Geometric topology (Lie group actions on manifolds, elliptic genera, curvature and symmetry)
Norbert Hungerbühler	Fribourg	Nonlinear PDEs, geometric evolution problems, calculus of variations
Ruth Kellerhals	Fribourg	Hyperbolic Geometry, Geometry of Discrete Groups
Elisa Gorla	Basel	commutative algebra, algebraic geometry, cryptography, coding theory
Hanspeter Kraft	Basel	algebraic transformation groups, representation theory, geometric and computational invariant theory
David Masser	Basel	Number theory (diophantine geometry, diophantine approximation, and transcendental numbers)
Richard S. Smith	Bern	Simulation modeling of plant development
Yvan Velenik	Geneva	Probability theory, statistical physics

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Prizes

On the occasion of the **Graduate Colloquium** of the Swiss Doctoral Program **Birkhäuser Publishing House** awards a prize for the best talk and a prize for the best poster.

Date	Prize	Laureate
8.12.2006	Best talk	Philipp Habegger (Basel)
8.12.2006	Best poster	François Fillastre (Neuchâtel)
29.5.2007	Best talk	Thierry Hild (Fribourg)
29.5.2007	Best poster	Shaula Fiorelli (Geneva)
13.9.2007	Swiss Academy of Sciences: Prix Jeunes Chercheures	Jonas Budmiger (Basel)
13.9.2007	Swiss Academy of Sciences: Prix A.F. Schläfli	Tatiana Mantuano (Neuchâtel)
25.1.2008	Best talk	Jonas Budmiger (Basel)
25.1.2008	Best poster	Clément Hongler (Geneva)
19.9.2008	Best talk	Roland Lötscher (Basel)
19.9.2008	Best poster	Yves Courvoisier (Geneva)
30.1.2009	Best talk	Katrin Fässler (Bern)
30.1.2009	Best poster	Roland Lötscher (Basel)
12.2.2010	Best talk	Georges Klein (Fribourg)
12.2.2010	Best poster	Grégory Roth (Neuchâtel)

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Job openings

Current Academic Job Announcements in Switzerland

- EPF Lausanne: [Professor position in the field of geometry](#)
- University of Fribourg: [Professorship in Analysis and its applications](#)
- University of Neuchâtel: [Maître Assistant \(80%, 4 years\)](#)
- University of Basel: [2 Professorships in Analysis](#)

Positions in Europe

- Portugal and US: [ICTI CMU-Portugal Ph.D. and Postdoctoral Fellowship in Applied Mathematics, Carnegie Mellon University](#)
- [1 postdoctoral research position and 3 research assistant positions](#) (DFG Sonderforschungsbereich/Transregio 71 "Geometrische Partielle Differentialgleichungen") at the University of Freiburg or Tübingen.

Positions in the US

- Portugal and US: [ICTI CMU-Portugal Ph.D. and Postdoctoral Fellowship in Applied Mathematics, Carnegie Mellon University](#)
- [CNA Post-Doctoral Positions](#), Carnegie Mellon University

Permanent Math Job Pages in Switzerland

- [University of Basel](#)
- [University of Fribourg](#)
- [University of Genève](#)
- [ETH Zürich](#)
- [Seminar Angewandte Mathematik, ETHZ](#)
- [Institute for Operations Research, ETHZ](#)
- [University of Zürich](#)

General Math Job Pages

- [myScience.ch](#)

- Luchsinger's Job Pages: [Switzerland](#), [worldwide](#)
- [EuroScienceJobs](#)
- [Careerjet](#)
- [Career.edu](#)
- [Euro-Math-Job](#)
- [Stellenbörse Mathematik](#)
- [SIAM Job Page](#)
- [The Statistics and Mathematics career source](#)
- [Data Shaping Solutions - Job search](#)
- [Data Shaping Solutions - Resumes](#)
- [jobrapido](#)
- [Renego](#)

Mathematicians and Statisticians

... and their way to professional independence:

- an essay of [Dr. C.J. Luchsinger](#).

Swiss Doctoral Program in Mathematics

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Grants

- [Swiss National Science Foundation](#)
- European Grants
 - [Erasmus Mundus scholarships](#)
 - [General FP7](#)
 - [CORDIS FP7](#)
 - [CORDIS FP7 Ideas](#)
 - [ERC Starting Independent Research Grant \(pdf\)](#)
 - [Find a call](#) (there, click on *Ideas: 2006-12-22: ERC-2007-StG*)

Swiss Doctoral Program in Mathematics

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Traineeships

- **IASTE** is an organization for the **exchange of students** at higher education institutions wishing to obtain **practical experience abroad**. **Companies**, on the other hand, who are interested to **offer traineeships** benefit from the worldwide IASTE network. The service is free of charge for the employers.

Swiss Doctoral Program in Mathematics

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Documents

This is a repository for documents of general interest. To post such a document, please send it to Bruno.Colbois@unine.ch.

- [How to write your first article](#) (Steven G. Krantz)
- [How to Give a Good Colloquium](#) (John E. McCarthy)
- [Instructions for typesetting a poster](#)
- What is a doctorate? The position of the CRUS: [deutsch](#), [français](#)

Swiss Doctoral Program in Mathematics

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History of the *Troisième cycle Romand de mathématiques*

General

Please see the article of Claude Weber on the history of the *Troisième cycle*. The text has been written on the occasion of the centennial of the Swiss Mathematical Society in 2010.

Presidents of the *Troisième cycle*

- 1969-1972 [Georges de Rham](#), Uni Lausanne
- 1973-1994 [Michel Kervaire](#), Uni Geneva
- 1995-2002 Alain Valette, Uni Neuchâtel
- 2003-2007 Olivier Besson, Uni Neuchâtel
- 2008-2009 Norbert Hungerbühler, Uni Fribourg

The *Troisième cycle Romand de mathématiques* has been merged with the *Swiss Doctoral Program in Mathematics* by the end of 2009.

Annual reports of the *Troisième cycle*

- [1969-70](#)
- [1970-71](#)
- [1971-72](#)
- [1972-73](#)
- [1973-74](#)
- [1974-75](#)
- [1975-76](#)
- [1976-77](#)
- [1977-78](#)
- [General remarks 1978](#)
- [1978-79](#)
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- General remarks 2006
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- 2009