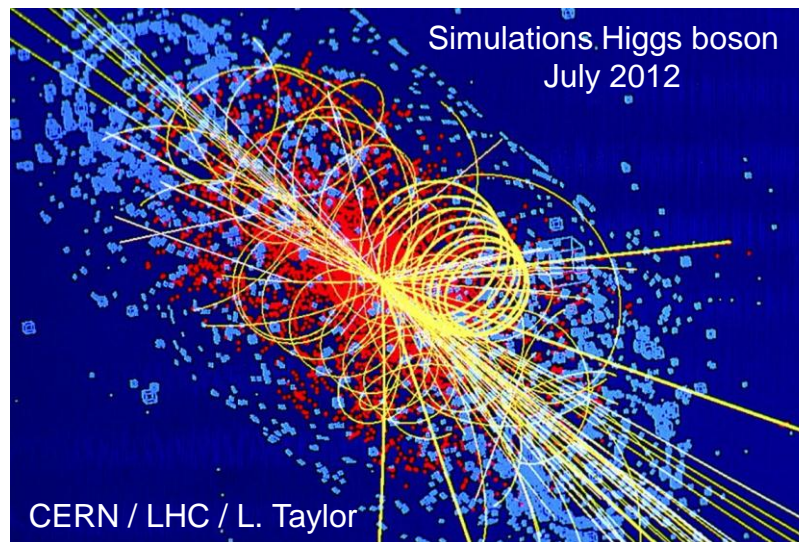




JOINT UNIVERSITIES ACCELERATOR SCHOOL

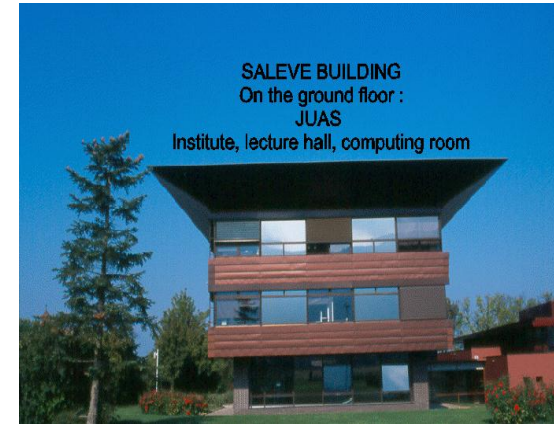
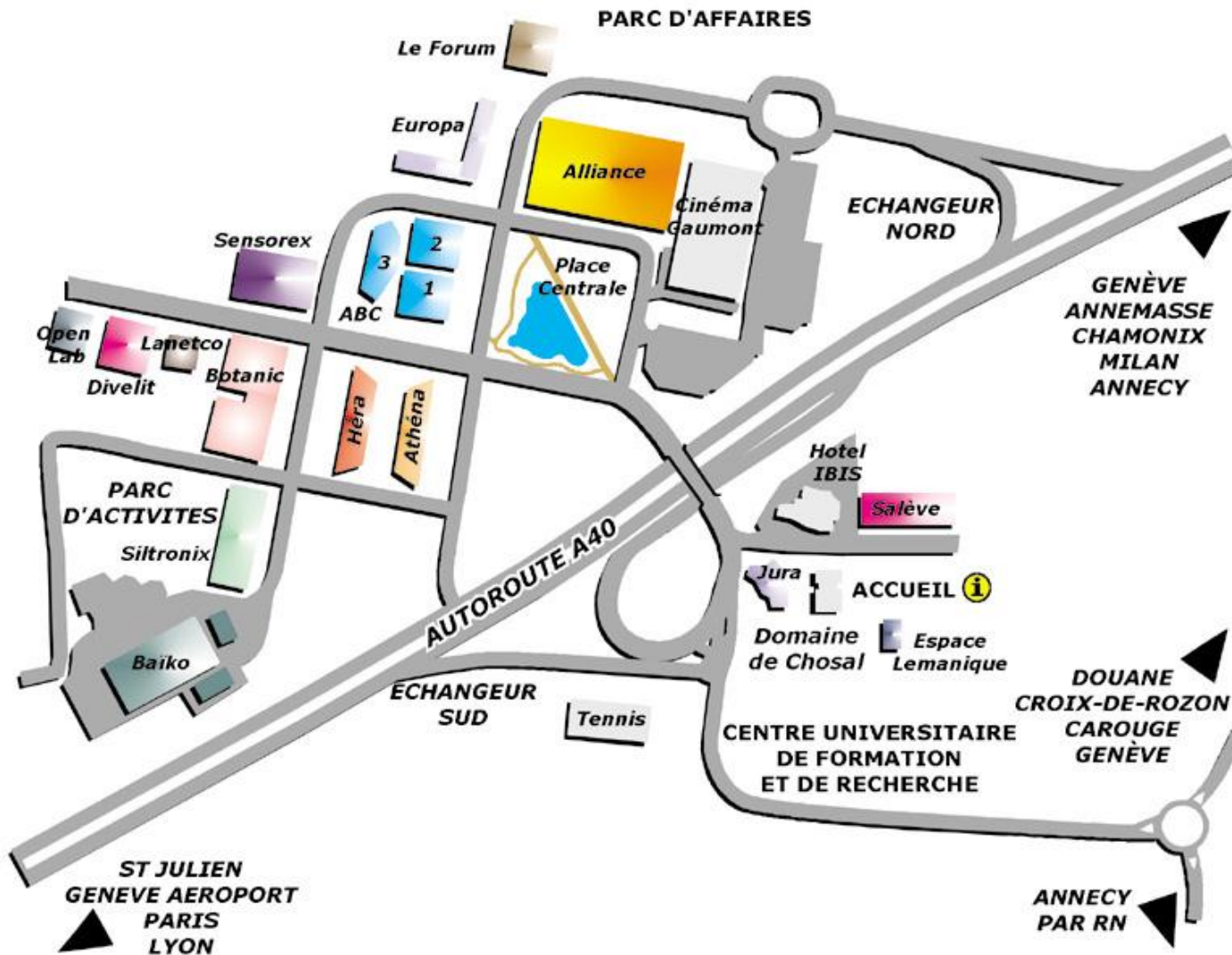
WELCOME TO JUAS 2013

Louis Rinolfi, Director

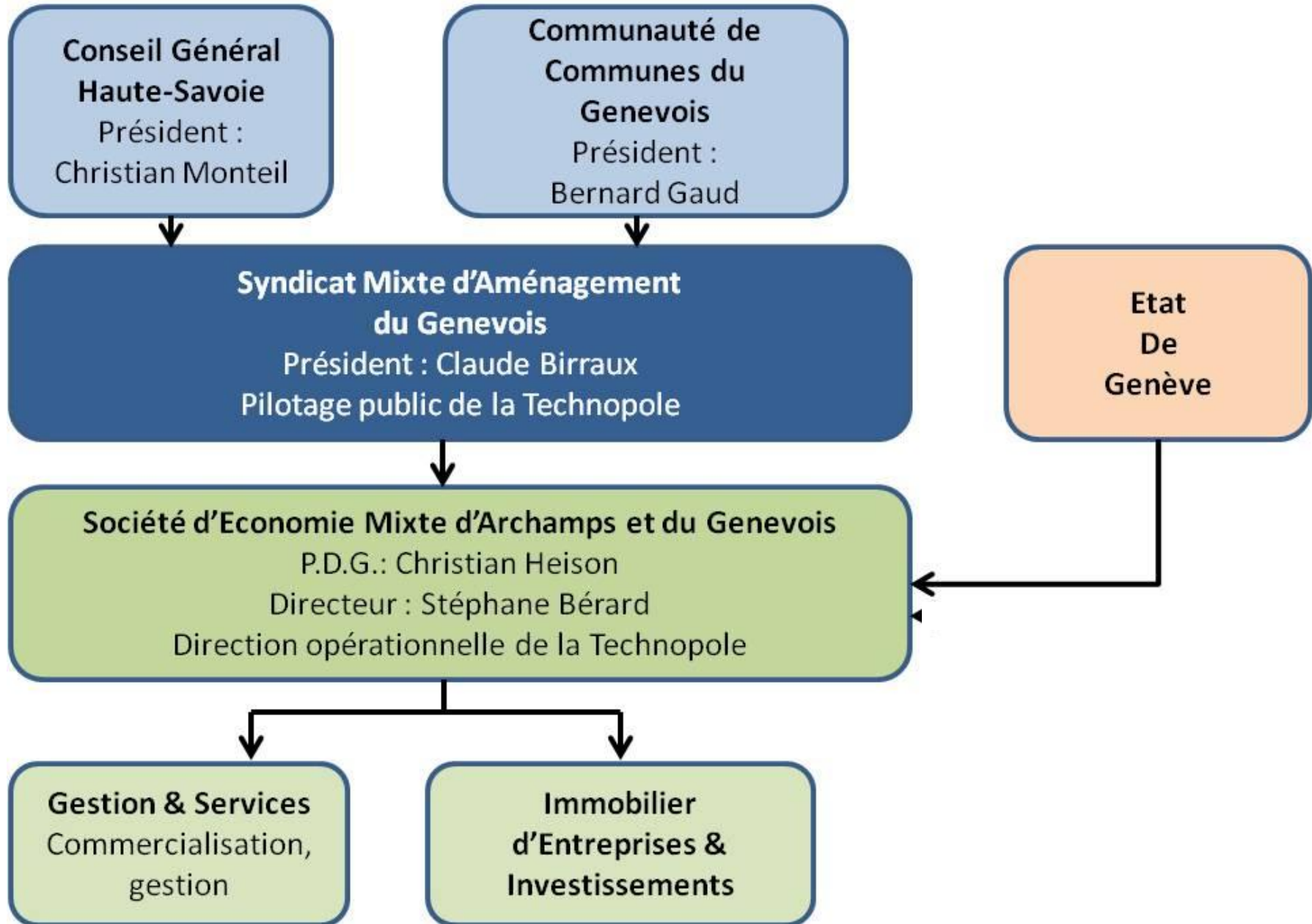




JOINT UNIVERSITIES ACCELERATOR SCHOOL



Archamps “Technopole”





ESI in Archamps Technopôle



ESI President: Hans Falk Hoffmann

Deputy: Manfred Buhler-Broglin

JUAS

2 courses (2 x 5 weeks)

Accelerator Physics

Accelerator Technology

Director: Louis Rinolfi

Accelerator Physicist / CERN

Deputy: Michel Martini

Accelerator Physicist / CERN

ESMP

1 course (6 weeks)

Medical Physics

Accelerator Technology

Director: Yves Lemoigne

Physicist

Deputy: Jacques Balosso

Professor at Grenoble University

***A third school ESIPAP is under preparation for 2014
with Johann Collot (LPSC - Grenoble) as Director***



Hans Hoffmann
President



Louis Rinolfi
JUAS Director



Marie Gauthier
Administrator



Yves Lemoigne
ESMP Director



Coline Creton
Assistant



JOINT UNIVERSITIES
ACCELERATOR SCHOOL



TWO COURSES ON PARTICLE ACCELERATORS
JUAS 2013
7 January to 15 March



Course 1. SCIENCE & PHYSICS (January 7th to February 8th)

Course 2. TECHNOLOGY & APPLICATIONS (February 11th to March 15th)

Intensive programme for graduate students and PhD

Modular Courses for Professionals

Credits available from the 14 European Universities (ECTS)

Organised with the support of 14 major European Universities:

- Universitat Politècnica de Catalunya
- Universitat Autònoma de Barcelona
- Technische Universität Darmstadt
- Universitat Joseph Fourier Grenoble
- Institut National Polytechnique de Grenoble
- Karlsruher Institut für Technologie
- Università degli Studi di Napoli « Federico II »
- Università degli Studi di Roma « La Sapienza »
- Technische Universität Berlin
- Università degli Studi di Genova
- Universitat de València
- Universität Heidelberg
- University of Liverpool
- Université Paris Sud - Orsay

Information: ESI - JUAS

Centre Universitaire de Formation et de Recherche
Bâtiment le Saïève - 135, rue Ada Byron
Archamps Technopôle
F-74166 Saint-Julien-en-Genevois Cedex

Phone: +33 (0)4 50 31 50 10
juas@esi.cur-archamps.fr

www.cern.ch/juas

JUAS Poster 2013

Available upon request



14 European Universities partners of JUAS in 2013

Universities	Members of Advisory Board	Since
Université Joseph Fourier Grenoble	Jean-Marie De Conto	1994
Technische Universität Darmstadt	Joachim Enders	1994
Karlsruher Institut für Technologie	Anke-Susanne Müller	1994
Universitat Politècnica de Catalunya	Antoni Mendez	1994
Universitat Autònoma de Barcelona	Francisco Calviño	1994
Institut Polytechnique de Grenoble	Elsa Merle-Lucotte	1994
Università degli studi di Napoli "Federico II"	Vittorio Vaccaro	1994
Università degli studi di Roma "La Sapienza"	Luigi Palumbo	1994
Università degli studi di Genova	Marco Bozzo	2002
Technische Universität Berlin	Heino Henke	2002
Universitat de Valencia	Angeles Faus-Golfe	2002
Universität Heidelberg	Andreas Schöning	2007
University of Liverpool	Carsten Welsch	2011
Université Paris-Sud Orsay	Costel Petrache	2012

11 Institutes in the JUAS Advisory Board

Institutes	Members of Advisory Board
ESI President	Hans Hoffmann
ESI administrator	Marie Gauthier
JUAS Director	Louis Rinolfi
CAS Director	Roger Bailey
CERN	Bernhard Holzer
Oxford University	Chris Prior
ESRF	Jean-Luc Revol
PSI	Terry Garvey
GSI	Oliver Boine-Frankenheim
DESY	Winfried Decking
BNL	François Meot

Institutes, Laboratories and Industrial sponsoring JUAS

Main sponsor:



Laboratories (alphabetic order)	
(ALBA)	ESS Bilbao (+ Lund)
Bergoz Instrumentation	GSI
CEA	HIC / FAIR
CERN	HZB
CNRS / IN2P3	INFN
CPAN	KIT
DESY	oPAC
(ESGARD)	PSI
ESRF	SOLEIL

JUAS sponsors



Professors and assistants in 2013 – Course 1

Professors / Assistants	Lecture	Home
P. Bryant	Introduction to Accelerators	England
H. Henke	Relativity & Electromagnetism	University Berlin
J.M. De Conto	Particle optics	University J. Fourier
A. Latina / J. Resta Lopez	Transverse Beam Dynamics	CERN
G. Sterbini	MADX	CERN
E. Métral	Longitudinal Beam Dynamics	CERN
A. Lombardi / J.B. Lallement	Linacs	CERN
Y. Papaphilippou	Linear imperfections	CERN
M. Migliorati	Instabilities	University Roma
K. Wille	Synchrotron radiations	University Dortmund
F. Chautard	Cyclotrons	GANIL
T. Perron	Injection / Extraction	ESRF

Seminars in 2013 – Course 1

Professors	Lecture	Home
L. Rinolfi	Linear colliders	CERN / JUAS
B. Cros	Plasma acceleration	CNRS / Paris Sud Orsay

WEEK 1

Anney on Saturday

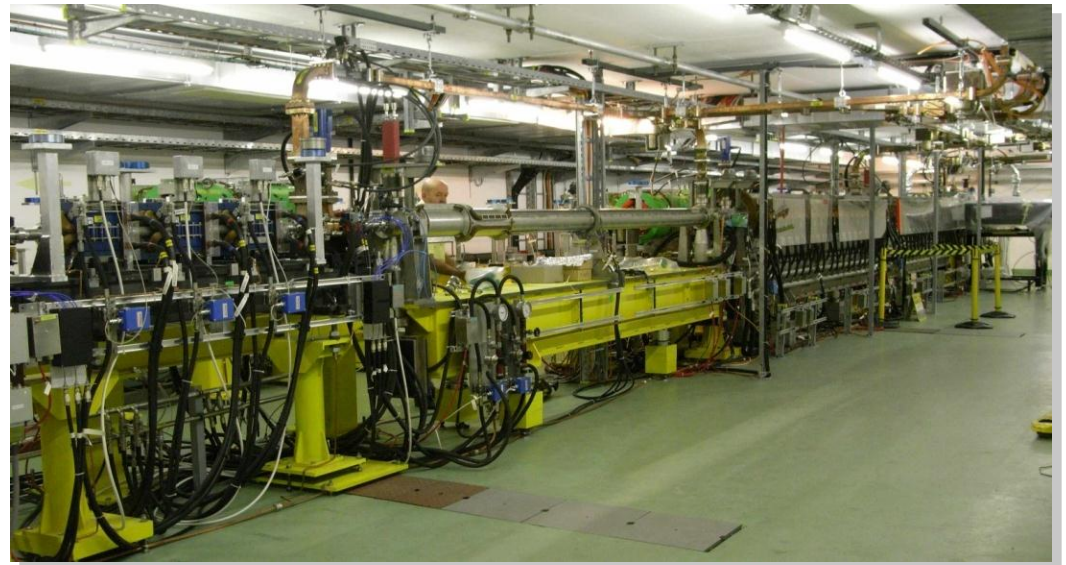
	Monday Jan 7th	Tuesday Jan 8th	Wednesday Jan 9th	Thursday Jan 10th	Friday Jan 11th	
09:00						09:00
	Registration and coffee at Juas Office	Relativity lecture <i>H. Henke</i>	Electro-magnetism lecture <i>H. Henke</i>	Particle optics lecture <i>J.M. De Conto</i>	Bus leaves at 8h15 at JUAS VISIT AT CERN <i>(Lunch at CERN)</i> Return scheduled at 13h30	
10:00		Coffee Break	Coffee Break	Coffee Break		10:00
10:15	Presentation of JUAS 2013 <i>L. Rinolfi</i>	Relativity tutorial <i>H. Henke</i>	Electro-magnetism tutorial <i>H. Henke</i>	Particle optics lecture <i>J.M. De Conto</i>		10:15
11:15	Presentation of students 2013 <i>L. Rinolfi</i>	Electro-magnetism lecture <i>H. Henke</i>	Electro-magnetism lecture <i>H. Henke</i>	Particle optics tutorial <i>J.M. De Conto</i>		11:15
12:15	WELCOME COCKTAIL	LUNCH	LUNCH	LUNCH		12:15
14:00	Official Opening of JUAS 2013 <i>with C. Heison of "Conseil General de Haute-Savoie"</i>	Intro. to Accelerators lecture <i>Ph. Bryant</i>	Intro. to Accelerators lecture <i>Ph. Bryant</i>	Particle optics lecture <i>J.M. De Conto</i>	Intro. to Accelerators lecture <i>Ph. Bryant</i>	14:00
15:00	Relativity lecture <i>H. Henke</i>	Intro. to Accelerators lecture <i>Ph. Bryant</i>	Intro. to Accelerators lecture <i>Ph. Bryant</i>	Particle optics tutorial <i>J.M. De Conto</i>	Introduction to the Mini-Workshop lecture <i>Ph. Bryant</i>	15:00
16:00	Coffee Break	Coffee Break	Coffee Break	Coffee Break	Coffee Break	16:00
16:15	Relativity lecture <i>H. Henke</i>	Intro. to Accelerators lecture <i>Ph. Bryant</i>	Intro. to Accelerators lecture <i>Ph. Bryant</i>	Particle optics lecture <i>J.M. De Conto</i>	Introduction to the Mini-Workshop lecture <i>Ph. Bryant</i>	16:15
17:15						17:15

CERN – CLIC Test Facility – CTF3



CLIC Show Room

CLIC Experimental Area
CLEX



Annecy – Saturday 12th January 2013



*Find all practical information in
Annecy Booklet, in your bag*

WEEK 2

		WEEK 2						
		Monday Jan 14th	Tuesday Jan 15th	Wednesday Jan 16th	Thursday Jan 17th	Friday Jan 18th		
09:00		Transverse Dynamics lecture <i>A. Latina</i>	Longitudinal Dynamics lecture <i>E. Métral</i>	Transverse Dynamics lecture <i>A. Latina</i>	Transverse Dynamics lecture <i>A. Latina</i>	Longitudinal Dynamics lecture <i>E. Métral</i>	09:00	
10:00		Bus leaves at 10h15 at JUAS (Lunch at ESRF) VISIT OF ESRF Return scheduled at 20h00	Coffee Break	Coffee Break	Coffee Break	Coffee Break	10:00	
10:15			Longitudinal Dynamics tutorial <i>E. Métral</i>	Longitudinal Dynamics lecture <i>E. Métral</i>	Longitudinal Dynamics lecture <i>E. Métral</i>	Longitudinal Dynamics lecture <i>E. Métral</i>	10:15	
11:15			Transverse Dynamics lecture <i>A. Latina</i>	Longitudinal Dynamics tutorial <i>E. Métral</i>	Longitudinal Dynamics lecture <i>E. Métral</i>	Longitudinal Dynamics tutorial <i>E. Métral</i>	11:15	
12:15			LUNCH	LUNCH	LUNCH	LUNCH	12:15	
14:00			Intro. to MADX <i>G. Sterbini</i>	MADX <i>A. Latina / G. Sterbini</i>	MADX <i>A. Latina / G. Sterbini</i>	Longitudinal Dynamics tutorial <i>E. Métral</i>	14:00	
15:00			Transverse Dynamics tutorial <i>A. Latina / J. Resta Lopez</i>	Longitudinal Dynamics lecture <i>E. Métral</i>	Transverse Dynamics tutorial <i>A. Latina / J. Resta Lopez</i>	Transverse Dynamics lecture <i>A. Latina</i>	15:00	
16:00			Coffee Break	Coffee Break	Coffee Break	Coffee Break	16:00	
16:15			Longitudinal Dynamics lecture <i>E. Métral</i>	Transverse Dynamics lecture <i>A. Latina</i>	Transverse Dynamics lecture <i>A. Latina</i>	Transverse Dynamics tutorial <i>A. Latina / J. Resta Lopez</i>	16:15	
17:15							17:15	

ESRF - Grenoble



Lausanne – Saturday 26th January 2013

L a u s a n n e



ÉCOLE POLYTECHNIQUE
FÉDÉRALE DE LAUSANNE

*All practical information will be
available in a booklet by the end of
the week*

WEEK 4

	Monday Jan 28th	Tuesday Jan 29th	Wednesday Jan 30th	Thursday Jan 31st	Friday Feb 01st	
09:00	Synchrotron Radiation lecture <i>K. Wille</i>	Machine Design tutorial <i>Ph. Bryant</i>	Synchrotron Radiation lecture <i>K. Wille</i>	Cyclotrons lecture <i>F. Chautard</i>	Synchrotron Radiation lecture <i>K. Wille</i>	09:00
10:00	Coffee Break	Coffee Break	Coffee Break	Coffee Break	Coffee Break	10:00
10:15	Synchrotron Radiation lecture <i>K. Wille</i>	Machine Design tutorial <i>Ph. Bryant</i>	Synchrotron Radiation tutorial <i>K. Wille</i>	Cyclotrons lecture <i>F. Chautard</i>	Synchrotron Radiation lecture <i>K. Wille</i>	10:15
11:15	Synchrotron Radiation tutorial <i>K. Wille</i>	Machine Design tutorial <i>Ph. Bryant</i>	Synchrotron Radiation lecture <i>K. Wille</i>	Cyclotrons tutorial <i>F. Chautard</i>	Synchrotron Radiation tutorial <i>K. Wille</i>	11:15
12:15	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH	12:15
13:00	Exercises in computer room	Exercises in computer room	Exercises in computer room	Exercises in computer room	Exercises in computer room	
14:00	Synchrotron Radiation lecture <i>K. Wille</i>	Machine Design tutorial <i>K. Wille</i>	Cyclotrons lecture <i>F. Chautard</i>	Seminar Linear colliders <i>L. Rinolfi</i>	Conclusion to mini- workshop <i>Ph. Bryant</i>	14:00
15:00	Synchrotron Radiation tutorial <i>K. Wille</i>	Machine Design tutorial <i>K. Wille</i>	Cyclotrons tutorial <i>F. Chautard</i>	Synchrotron Radiation lecture <i>K. Wille</i>	Conclusion to mini- workshop <i>Ph. Bryant</i>	15:00
16:00	Coffee Break	Coffee Break	Coffee Break	Coffee Break	Coffee Break	16:00
16:15	Exercises in computer room	Machine Design tutorial <i>K. Wille</i>	Cyclotrons lecture <i>F. Chautard</i>	Seminar Plasma & Laser <i>B. Cros</i>	Conclusion to mini- workshop <i>Ph. Bryant</i>	16:15
17:15						17:15

Presentation of the mini-workshop



EXAMINATION

Examinations are mandatory for:

- * Master students
- * For students who have received a financial support

Each student who get an **average mark of 10/ 20** (or above) will receive **10 ECTS** recognized by the partner Universities.

There are 5 topics, each of them lasts 1 hour:

- * Transverse Beam Dynamics
- * Longitudinal Beam Dynamics
- * Synchrotron Radiations
- * The remaining 2 exams are announced the week 4 (week before the exams)

For each examination, all **written documents are permitted** and a pocket calculator.

It is strictly forbidden to have a electronic device (iPhone, Portable, etc...) during the exam

WEEK 5

		Monday Feb 4th	Tuesday Feb 5th	Wednesday Feb 6th	Thursday Feb 7th	Friday Feb 8th		
09:00							09:00	
			EXAMINATION	EXAMINATION	EXAMINATION			
			Transverse beam dynamics	Longitudinal beam dynamics	Synchrotron radiation			
10:00			<i>Written session</i>	<i>Written session</i>	<i>Written session</i>		10:00	
10:15							10:15	
	10:30		Coffee Break	Coffee Break	Coffee Break			
	10:45							
11:15				EXAMINATION	EXAMINATION		11:15	
				Subject to be defined	Subject to be defined			
				<i>written session</i>	<i>written session</i>			
12:15							12:15	
13:00					BUFFET			
					END OF 1ST			
					JUAS SESSION			
14:00							14:00	
15:00							15:00	
16:00							16:00	
16:15							16:15	
17:15							17:15	



Archamps, March, 30th 2012

JUAS CERTIFICATE 2012

SCIENCE & PHYSICS OF PARTICLE ACCELERATORS

M. ██████████

has attended 4 weeks of lectures, tutorials and seminars at JUAS school in 2012. He has also participated in the fifth week of examination and has passed successfully the exams, for an equivalent of 10 ECTS (European Credit Transfer System), acknowledged by the 13 European Universities*.

Average score : ██/20

Rank ██/25

Average score of the class : ███/20

Louis RINOLFI
JUAS Director

JUAS certificate of examination for course 1

*Each student who obtains a mark equal
(or above) to 10 / 20 will receive such
certificate*

* Universitat Politècnica de Catalunya
Universitat Autònoma de Barcelona
Technische Universität Darmstadt
Université Joseph Fourier Grenoble
Institut National Polytechnique de Grenoble

Karlsruher Institute für Technologie
Università degli Studi di Napoli „Federico II”
Università degli Studi di Roma „La Sapienza”
Technische Universität Berlin

Università degli Studi di Genova
Universitat de València
Universität Heidelberg
University of Liverpool

Course nomenclature at JUAS

There is an “official” document available on web. It is the official JUAS and CERN Schools nomenclature.

We encourage you to keep that document with you, use it, discuss it with the lecturers whenever necessary.

CAS

THE CERN ACCELERATOR SCHOOL

JUAS

THE JOINT UNIVERSITIES
ACCELERATOR SCHOOL

Nomenclature & Formulæ

This document has been produced by the Advisory and Programme Committee of the Joint Universities Accelerator School (JUAS), under the coordination of the School Director.

It has been agreed between the two Schools, CAS and JUAS, that it should serve as a guideline for the lectures presented both at the JUAS and CAS courses.

Practical information (1)

The Time Table is displayed:

- ✓ in the Amphitheatre
- ✓ in the computer room
- ✓ on the web site
- ✓ in the institutes ...

if a discrepancy occurs, only what is displayed in the JUAS amphitheatre is effective

Books:

We have many accelerator publications and books, for loan, on the shelves in JUAS students room. They can be borrowed and kept for the duration of the school.

Please ask **Coline Creton** before borrowing, so that we know where books are.

Practical information (2)

Home work:

There is room within JUAS area for home work after lecture time, working in group as well. We encourage you to make small working teams, work together – just like in real “Accelerator Physicist's Life”.

Internet:

Each student will receive a password to connect to internet with a personal computer.

Wi-Fi is available in the Residences :

- ✓ La Colombiere, for free
- ✓ Logitop, for free
- ✓ Residential : ask **Marie Gauthier** to get a cable (5€ deposit), then ask Residential reception to get an access for free (valued 10€ per week). The school will pay at the end of your stay.

JUAS web site:

In the Web site : www.cern.ch/juas

- The Time Table is kept updated when a change occurs for a lecture or a visit.
- Proposals for Traineeships, PhD, etc. , submitted by laboratories are displayed
- Many other useful information are available.

Practical information (3)

Computer Room

There are 41 computers in the Computer Room BUT you are more students:

Each participant will use a single computer available in the room except a few students who have registered after the deadline but have been accepted at the school. They will form a team of 2 persons per computer. Coline Creton has made a list of these teams.

If you have a laptop, inform Coline in order to reorganize the list.

Practical information (4)

Coffee breaks:

Twice a day, morning and afternoon, the right place for discussions of all sort !

An accelerator world concept : 50% of the research is performed during coffee breaks.

The right place for discussing with lecturers and looking for a training period in an accelerator Laboratory.

Lunch:

The Alliance building has several restaurants... unless you do it home.

Ticket of 3 Euros will be provided by JUAS for one meal per day.

There is a restaurant Best Western, on the site. There is also a restaurant at La Colombière, (open from 23rd January 2013).

Dinner:

Everybody is free to organize himself.

Practical information (5)

Transportation:

It could be a problem because no public transportation close to JUAS building:

Bus stop at La Croix de Rozon (1200 m from JUAS) to Geneva

Bus stop at Vitam Park (800 m from La Colombière) for Geneva and for Annecy

However, some of you have cars:

⇒ **friendly spirit is welcome to share good moments, ideas and cars**

Super-market at St-Julien-en-Genevois : a shuttle bus is organized every Monday at 5.15pm
(except for week 2, as you will be at ESRF on Monday, the shuttle bus is organized on Tuesday)

Read brochure “Students Information file” given to you or ask Coline for detailed information

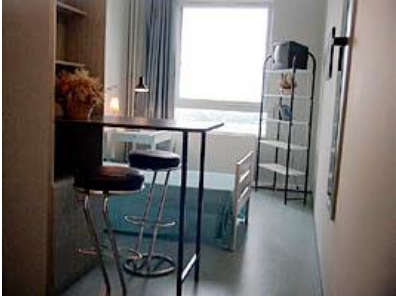


STUDENTS' INFORMATION FILE JUAS 2013

Additional Information to our website :

www.cern.ch/juas

Lodging Facilities in Archamps



LOGITOP : Individual studio with free Wi-Fi



LA COLOMBIERE : Mobil-homes with free Wi-Fi



RESIDENTIAL : Apartments with Wi-Fi paid by JUAS

About accommodation

- **RESIDENTIAL Residence (Archamps)**

Contact person : Ms Bernadette Depierre (Laetitia, the assistant speaks English)

Mobile phone : +33.6.17.97.32.25

Phone number : +33.4.50.31.25.25

- **Logitop Résidence Grand Angle (Archamps)**

Contact person : Ms Joelle ROUVIERE

Phone number : +33.4.50.43.26.00

- **La Colombière (Neydens)**

166 Chemin Neuf, 74160 Neydens

Famille BUSSAT

Phone number : +33.4.50.35.13.14

www.camping-la-colombiere.com

- **IBIS Hotel (Archamps)**

Phone number : + 33-(0)4-50-95-38-18

Fax number : + 33-(0)4-50-95-38-95

Website : www.ibishotel.com

Your contribution to JUAS

Presence sheets :

To be signed once a day, in the morning.

We need it for Administration purposes (funding, statistics, etc...)

Appreciation sheets :

JUAS needs your appreciations on the lectures and lecturers.

Appreciation forms will be given to you for that purpose.

Please bend down on that form as long as necessary, think of it, fill it,

and... *return it to us ...*

Appreciation sheets

You do not have to put your name on the form, although it can be useful for us to know which country / university system you come from when analysing your comments.

MARKING

Between 0 and 5 Example :

Requested Level	Oral Presentation (Pedagogy)	Written Documentation
Too much = 5 As expected = 3 Too low = 0	Excellent = 5 Satisfactory = 3 Bad = 0	Excellent = 5 Satisfactory = 3 Not acceptable = 0

Name (optional) : _____

Job opportunities from JUAS

Being at JUAS is **THE** opportunity to find a position for an:

➡ Internship or traineeship in European Laboratories,

➡ Summer job,

➡ a PhD grant,

or other job opportunity.

-talk to the lecturers, question them on that.

-talk to people you'll meet during the various Laboratory visits.

-we keep updated the JUAS web site with job/traineeship/PhD/post announcements:

see the link [job opportunities](#)

Accelerator Conference prize for JUAS

Each year JUAS is allotted a grant by the

International Particle Accelerator Conference called “IPAC”

The requirements to attend IPAC Conferences are the following:

1. To follow both JUAS courses
2. To obtain the best marks at the examination
3. To continue in the field of particle accelerator at the time of the conference
4. To be proposed by JUAS Director to IPAC Conferences Coordinator
5. To present work at the conference, abstract/poster and contribution to proceedings
6. To serve as required, scientific secretary, etc. as for other supported students

JUAS laureates

2006 : Javier Barranco	UPC Madrid,	PAC 2007, US
2006 : Matthias Euler	TU-Darmstadt,	EPAC 2008, Genoa
2007 : Alexandre Pichard	INP-Grenoble,	EPAC 2008, Genoa
2008 : Christopher Bauer	TU-Darmstadt,	PAC 2009, Vancouver
2009 : Timo Bloch	TU-Darmstadt,	IPAC 2010, Kyoto, 23-28 May
2010: Philipp John	TU-Darmstadt	IPAC 2011, San Sebastian, 4-9 September
2010: Javier Jongalez	Valencia - Spain	IPAC 2011, San Sebastian, 4-9 September
2011: Yan Dutheil	J. Fourier Grenoble	IPAC 2012, New Orleans, 20-25 May
2012: Robert Stegmann	TU-Darmstadt	IPAC 2012, New Orleans, 20-25 May

Future JUAS Promotion:

1 grant for JUAS 2013 student to attend IPAC'13 (Shanghai – China, 12 – 17 May)

	Countries	Sudents
1	Argentina	1
2	Austria	1
3	Belgium	1
4	China	3
5	Denmark	4
6	France	9
7	Germany	7
8	Greece	1
9	India	3
10	Iran	6
11	Italy	11
12	Japan	1
13	Morocco	1
14	Mexico	3
15	Montenegro	1
16	Pakistan	1
17	Poland	2
18	Portugal	1
19	Spain	5
20	Tunisia	2
21	United Kingdom	1
22	Ukraine	1
Total	22	66

Participants in 2013
by country
(Alphabetic order)

JUAS 2013 – Photo

Wednesday 9th January 2013 during the coffee break at 10 a.m.



Students JUAS 2012 – Course 1



Students JUAS 2012 – Course 2

Last but not least ...

Please **ARRIVE ON TIME AT THE LECTURES**

It means, manage to be installed 5 minutes ahead of schedule
(usually 9 a.m., morning and 2 p.m., afternoon session)

*lectures are short, lecturers cannot afford wasting time
being late means disturbing everyone, including the lecturers...*

Now you are ready to start the first course:
“Sciences & Physics of Particles Accelerators”

I wish you a pleasant stay at JUAS 2013