

WELCOME TO JUAS 2012

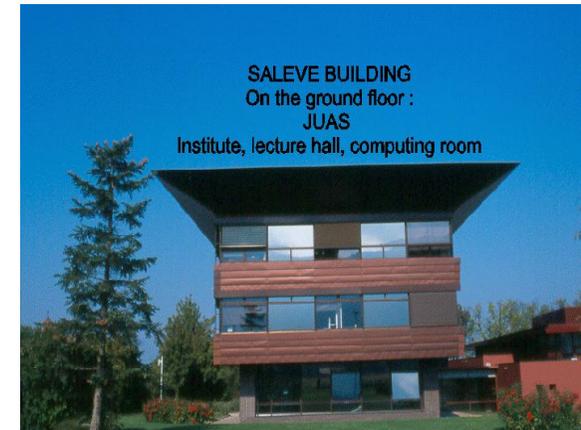
Louis Rinolfi



Joint Universities Accelerator School

JUAS 2012 course 1 in Archamps





JUAS 2012

9 January – 16 March

Archamps (France), 7 km from Geneva (Switzerland)

TWO COURSES ON PARTICLE ACCELERATORS :

1. SCIENCE & PHYSICS

(January 9th to February 10th)

2. TECHNOLOGY & APPLICATIONS

(February 13th to March 16th)

Intensive programme for graduate students

Credits Available from the 13 European Universities (ECTS)

Modular Courses for Professionals

Information: **ESI/JUAS**

Centre Universitaire de Formation et de Recherche

Site d'Archamps

F-74160 Archamps

Phone: +33 (0)4 50 31 50 10

juas@esi.cur-archamps.fr

www.cern.ch/juas



Organised by

The European Scientific Institute
with the support of 13 major
European Universities

Universitat Politècnica de Catalunya

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Technische Universität Darmstadt

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Institut National Polytechnique de Grenoble

Karlsruhe Institute of Technology

Università degli Studi di Napoli « Federico II »

Università degli Studi di Roma « La Sapienza »

Technische Universität Berlin

Università degli Studi di Genova

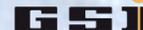
Universitat de València

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Structure of Archamps Technopole

ESI: European Scientific Institute

President Manfred Buhler-Broglin

ESI Administrators: Marie Gauthier and Sebastien Rinolfi

ESI Assistant : Filiz Demolis

2 schools

JUAS

2 courses

Accelerator Physics

Accelerator Technology

January – March

Director: Louis Rinolfi

Accelerator Physicist

CERN

ESMP

1 course

Medical Physics

November

Director: Yves Lemoigne

Physicist

CEA / IRFU

The ESI Team



Manfred Buhler-Broglin



Marie Gauthier



Sébastien Rinolfi



Filiz Demolis



Louis Rinolfi



Yves Lemoigne

13 European Universities - JUAS in 2012

Universities	Member of Advisory Committee	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	Andre Schöning	2007
University of Liverpool	Carsten Welsch	2011

Institutes, Laboratories and Industrial sponsoring JUAS

Laboratories (alphabetic order)
Bergoz Instrumentation
CEA
CERN
CNRS / IN2P3
CPAN
DESY
ESRF
GSI
HIC / FAIR
HZB
PSI
SOLEIL

Professors and assistants in 2012 – Course 2

Professors	Lecture	Home
A. Ballarino	Superconductivity	CERN
F. Caspers	RF engineering	CERN
P. Chiggiato	Vacuum systems	CERN
S. Russenschuck	Design accelerator magnets	CERN
T. Zickler	Normal conducting magnets	CERN
M. Wilson	Super Conducting magnets	Oxford Instrument
F. Caspers / W. Weingarten	Super Conducting RF cavities	CERN
P. Forck	Beam instrumentation	GSI / Germany
T. Thuillier	Particle sources	LPSC / Grenoble
E. Zimoch	Accelerator command/control	PSI / Villigen / Switzerland
S. Bousson	High current proton linacs	IN2P3 / IPNO / Orsay
P. Berkvens	Radiation safety	ESRF / Grenoble
G. Beyer	Production of medical isotopes	HCU Genève
R. Miralbell	Therapeutic applications	HCU Genève
W. Mondelaers	Electron accelerators	University Gent / Belgium
P. Verbruggen	Accelerators for industrial	IBA / Belgium

WEEK 6

JUAS 2012	Monday Feb 13th	Tuesday Feb 14th	Wednesday Feb 15th	Thursday Feb 16th	Friday Feb 17th	
09:00	Registration at Juas Office	RF Engineering lecture <i>F. Caspers</i>	Vacuum systems lecture <i>P. Chiggiato</i>	RF Engineering lecture <i>F. Caspers</i>	RF Engineering tutorial <i>F. Caspers</i>	09:00
10:00	Presentation of JUAS 2012 <i>L. Rinolfi</i>	Coffee Break	Coffee Break	Coffee Break	Coffee Break	10:00
10:15		RF Engineering tutorial <i>F. Caspers</i>	Vacuum systems lecture <i>P. Chiggiato</i>	Vacuum systems lecture <i>P. Chiggiato</i>	RF Engineering tutorial <i>F. Caspers</i>	10:15
11:15	Presentation of students 2012 <i>L. Rinolfi</i>	RF Engineering lecture <i>F. Caspers</i>	Vacuum systems tutorial <i>P. Chiggiato / R. Kersevan</i>	Vacuum systems tutorial <i>P. Chiggiato / R. Kersevan</i>	Bus leaves at 11h30 at JUAS <i>(lunch at CERN)</i> VISIT AT CERN	11:15
12:15	WELCOME	LUNCH	LUNCH	LUNCH		12:15
13:00	COCKTAIL	Exercises in computer room	Exercises in computer room	Exercises in computer room		13:00
14:00	Introduction to CERN practical day	RF Engineering lecture <i>F. Caspers</i>	Vacuum systems lecture <i>P. Chiggiato</i>	RF Engineering lecture <i>F. Caspers</i>		14:00
15:00	RF Engineering lecture <i>F. Caspers</i>	RF Engineering tutorial <i>F. Caspers</i>	Vacuum systems tutorial <i>P. Chiggiato / R. Kersevan</i>	RF Engineering tutorial <i>F. Caspers</i>		15:00
16:00	Coffee Break	Coffee Break	Coffee Break	Coffee Break		16:00
16:15	RF Engineering lecture <i>F. Caspers</i>	RF Engineering lecture <i>F. Caspers</i>	Seminar Hadron therapy <i>A. Degiovanni</i>	RF Engineering lecture <i>F. Caspers</i>	Return scheduled at 18h30	16:15
17:15						17:15

Week 6 – Course 2

Shuttle to super market from JUAS building: 2 transports only

- 1) Today Monday 13th February 2012 at 17h30
- 2) Monday 27th February at 17h30 also

Wednesday 15th February (and Thursday 23rd February)

16h15 : JUAS Seminars: no paper copy – only from Indico JUAS web site

Friday 17th February:

12h: Lunch at CERN Restaurant 1: each student pay its meal: CHF or Euros

13h30 : CERN presentation in Conference Room Building 33: CERN Reception

CERN Visit Friday 17th February 2012

	CERN presentation	Linacs	CTF3	AD	ATLAS Cavern	ATLAS Visitor Center	Globe
13h30 – 14h15	Building 33						
14h15 – 14h30	Bus move to the building 2010 (large parking lot: CTF3-CLEX entry) Distribution of groups						
14h30 – 15h25		Group B+D J.B.	Group C F.T. L.R.	Group A F.C. S.F.			
15h25 – 15h35	Exchange groups at PS cafeteria						
15h35 – 16h30		Group C J.B.	Group B+D F.T. L.R.				
16h30 – 16h40	Group A => AVC (Sune) Group B => Globe (Herve) Group C => Globe (Louis) Group D => Globe (Herve)						
16h40 - 17h						Group 1 S.J.	Group 2 + 3 H.G.
17h – 17h40					Group 1 S.J.	Group 2 M.H.	Group 3 H.G.
17h40 – 18h20					Group 2 M.H.	Group 3 J.G.	Group 1 H.G.
18h20 – 19h					Group 3 J.G.		

F.C. = Fritz Caspers

S. F. = Silke Federmann

J.B. = Johannes Broere

F.T. = Frank Tecker

L.R. = Louis Rinolfi

H.G. = Herve Genoud

S.J. = Sune Jacobsen

M.H. = Michael Hauschild

J.G. = Jan Godlewski

J.D. = Jens Dopke

		WEEK 7				Chamonix day	
JUAS 2012	Monday Feb 20th	Tuesday Feb 21st	Wednesday Feb 22nd	Thursday Feb 23rd	Friday Feb 24th		
09:00	Magnets design lecture <i>S. Russenschuck</i>	Magnets design lecture <i>S. Russenschuck</i>	Superconducting magnets lecture <i>M. Wilson</i>	NC MAGNETS COMPUTER WORK	Bus leaves at 8h30 at JUAS	09:00	
10:00	Coffee Break	Coffee Break	Coffee Break	Coffee Break		10:00	
10:15	Magnets design lecture <i>S. Russenschuck</i>	Magnets design lecture <i>S. Russenschuck</i>	Superconducting magnets tutorial <i>M. Wilson</i>	NC MAGNETS COMPUTER WORK		10:15	
11:15	Magnets design lecture <i>S. Russenschuck</i>	Magnets design lecture <i>S. Russenschuck</i>	Superconducting magnets lecture <i>M. Wilson</i>			PRACTICAL WORKS AT CERN	11:15
12:15	LUNCH	LUNCH	LUNCH	LUNCH		12:15	
14:00	Normal Conducting magnets lecture <i>T. Zickler</i>	Superconducting magnets lecture <i>M. Wilson</i>	Superconducting magnets lecture <i>M. Wilson</i>	SC MAGNETS COMPUTER WORK		1) RF	14:00
15:00	Normal Conducting magnets lecture <i>T. Zickler</i>	Superconducting magnets lecture <i>M. Wilson</i>	Mini workshop magnets <i>S. Russenschuck</i>	<i>S. Russenschuck</i>		2) VACUUM	15:00
16:00	Coffee Break	Coffee Break	Coffee Break			Coffee Break	3) MAGNETS
16:15	Normal Conducting magnets lecture <i>T. Zickler</i>	Superconducting magnets tutorial <i>M. Wilson</i>	Mini workshop magnets <i>S. Russenschuck</i>	Seminar Effects of radiation in particle accelerators <i>R. Losito</i>		4) SUPERCONDUCTIVITY	16:15
17:15						Return scheduled at 18h30	17:15

A full day of practical works at CERN

The “Introduction to Accelerators” (1 hour this afternoon) is replaced by presentations of practical works at CERN

Group 1:	RF works	Fritz Caspers + RF team
Group 2:	Vacuum works	Paolo Chiggiato + Vacuum team
Group 3:	Magnets works	Stephan Russenschuck + Magnets team
Group 4:	Superconductivity	Amalia Ballarino + cryogenic team

You should choose a group today during the coffee break with priority between 1 and 3

Filiz will give you a sheet to be filled out with your choice

A week-end at Chamonix

JUAS Team is willing to book a bus for one day of free visit at Chamonix

Point 1:

Choice between Saturday 25th February or Sunday 26th February 2012

Point 2:

Cost 15 Euros / participant

Condition: at least 20 participants should book and pay their contribution

WEEK 8

JUAS 2012	Monday Feb 27th	Tuesday Feb 28th	Wednesday Feb 29th	Thursday Mar 1st	Friday Mar 2nd	
09:00	Superconducting RF Cavities lecture <i>F. Caspers</i>	Superconducting RF Cavities tutorial <i>F. Caspers / W. Weingarten</i>	Beam instrumentation lecture <i>P. Forck</i>	Beam instrumentation lecture <i>P. Forck</i>	VISIT PSI TRAVEL TO VILLIGEN VILLIGEN	09:00
10:00	Coffee Break	Coffee Break	Coffee Break	Coffee Break		10:00
10:15	Superconducting RF Cavities lecture <i>F. Caspers</i>	Beam instrumentation lecture <i>P. Forck</i>	Beam instrumentation lecture <i>P. Forck</i>	<i>Bus leaves at 10h15 at JUAS</i>		10:15
11:15	Superconducting RF Cavities lecture <i>F. Caspers</i>	Beam instrumentation lecture <i>P. Forck</i>	Beam instrumentation lecture <i>P. Forck</i>			11:15
12:15	LUNCH	LUNCH	LUNCH			12:15
14:00	Exercise in computer room					14:00
15:00	Superconducting RF Cavities tutorial <i>F. Caspers / W. Weingarten</i>	Beam instrumentation tutorial <i>P. Forck</i>	Beam instrumentation tutorial <i>P. Forck</i>	VISIT		15:00
16:00	Superconducting RF Cavities tutorial <i>F. Caspers / W. Weingarten</i>	Beam instrumentation tutorial <i>P. Forck</i>	Beam instrumentation tutorial <i>P. Forck</i>	PSI		16:00
16:15	Coffee Break	Coffee Break	Coffee Break	<i>Return scheduled at 21h00</i>		16:15
17:15	Superconducting RF Cavities lecture <i>F. Caspers</i>	Beam instrumentation lecture <i>P. Forck</i>	Beam instrumentation lecture <i>P. Forck</i>			<i>Dinner at PSI</i>

Visit to PSI at Villigen - Switzerland

Thursday 1st March

- 10h15: Bus leaves JUAS
- 12h: Lunch on the motorway restaurant. Every participant will pay his meal
- 15h: Arrival to PSI + presentations + visits (see PSI program)
- 18h: Distribution of rooms (1 group at PSI guest house + 1 group at Linde hotel)
- 19h: Dinner at PSI restaurant (meal offered)

Friday 2nd March

- 8h15: Breakfast at PSI restaurant
- 9h: Start PSI visits (see PSI program)
- 12h: Lunch at PSI restaurant (meal offered)
- 14h: Continue PSI visit
- 16h30: End of visits - Bus leaves PSI

WEEK 9

JUAS 2012	Monday Mar 5th	Tuesday Mar 6th	Wednesday Mar 7th	Thursday Mar 8th	Friday Mar 9th	
09:00	Particle Sources lecture <i>T. Thuillier</i>	Low Energy Electron Accelerators lecture <i>W. Mondelaers</i>	Bus leaves at 8h30 VISIT AND EXPERIMENTAL WORK AT BERGOZ INSTRUMENTATION Return scheduled at 18h30	High Current Proton Linacs lecture <i>S. Bousson</i>	Radiation & Safety lecture <i>P. Berkvens</i>	09:00
10:00	Coffee Break	Coffee Break		Coffee Break	Coffee Break	10:00
10:15	Particle Sources lecture <i>T. Thuillier</i>	Low Energy Electron Accelerators lecture <i>W. Mondelaers</i>		High Current Proton Linacs lecture <i>S. Bousson</i>	Radiation & Safety lecture <i>P. Berkvens</i>	10:15
11:15	Particle Sources lecture <i>T. Thuillier</i>	Low Energy Electron Accelerators lecture <i>W. Mondelaers</i>		High Current Proton Linacs lecture <i>S. Bousson</i>	Radiation & Safety lecture <i>P. Berkvens</i>	11:15
12:15	LUNCH	LUNCH		LUNCH	LUNCH	12:15
14:00	Particle Sources tutorial <i>T. Thuillier</i>	Acc. for indust. & medical applications lecture <i>P. Verbruggen</i>		Production of medical isotopes lecture <i>G. Beyer</i>	Bus leaves at 13h30 Therapeutic Applications at Geneva Hospital <i>R. Miralbell</i> Return scheduled at 18h30	14:00
15:00	Accelerator Control lecture <i>E. Zimoch</i>	Acc. for indust. & medical applications lecture <i>P. Verbruggen</i>		Production of medical isotopes lecture <i>G. Beyer</i>		15:00
16:00	Coffee Break	Coffee Break		Coffee Break		16:00
16:15	Accelerator Control lecture <i>E. Zimoch</i>	Acc. for indust. & medical applications lecture <i>P. Verbruggen</i>		Production of medical isotopes lecture <i>G. Beyer</i>		16:15
17:15						17:15

WEEK 10

JUAS 2012

	Monday Mar 12th	Tuesday Mar 13th	Wednesday Mar 14th	Thursday Mar 15th	Friday Mar 16th
09:00					09:00
10:00		EXAMINATION	EXAMINATION	EXAMINATION	10:00
10:15		RF	Magnets	Beam Instrumentation	10:15
10:30		<i>Written session</i>	<i>Written session</i>	<i>Written session</i>	
10:45		Coffee Break	Coffee Break	Coffee Break	
11:15			EXAMINATION Subject to be defined	EXAMINATION Subject to be defined	11:15
12:15			<i>written session</i>	<i>written session</i>	12:15
13:00				BUFFET END OF 2nd JUAS SESSION	
14:00					14:00
15:00					15:00
16:00					16:00
16:15					16:15
17:15					17:15

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 (should be often !)

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

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

Computers are available in JUAS room, for e-mailing and other web surfing. Wi-Fi is available at La Colombiere. Internet is available at Residential and Logitop: cables can be borrowed at JUAS against 5 Euros which are given back when the cable is returned.

Computer room

e-mailing and web surfing are not permitted in the Computer Room.

In principle, each participant will use a single computer available in the room. However, in case, one computer is not working, please arrange a team of 2 persons for a single computer.

Computer room - JUAS 2012 – course 1



Practical information

Books :

We have many accelerator publications and books, for loan, on the shelves in JUAS area. They can be borrowed and kept for the duration of the school. Please ask either Filiz or Marie **before borrowing**, so that we know where books are.

JUAS web site :

The new Web site maintained updated: www.cern.ch/juas

- The Time Table is kept updated each time a change occurs for a lecture or a visit.
- The proposals for Traineeships, PhD, , submitted by laboratories are displayed

Every day life at JUAS

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.

Transportation :

No public buses transportation.

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

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

In addition, some of you have cars.

Read brochure **“Students Information file”** given to you after registration.

JUAS secretariat is at your disposal if you need more detailed information.

A coffee break at JUAS 2012





STUDENTS' INFORMATION FILE JUAS 2012

Additional Information to our website :

www.cern.ch/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.

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

Appreciation sheets :

JUAS needs your appreciations on the lectures/lecturers.

Appreciation forms will be given to you for that purpose. One per week.

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

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

Appreciation sheets

Your impressions on the programme

Course 1 and Course 2

The Advisory Board has done its best to present a balanced syllabus. Your impressions on the course, however, are the best source of information we have concerning the appropriateness and level of the topics covered.

Please take time to fill out this sheet and give it back to JUAS Assistant Filiz Demolis.

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.

JUAS web site is updated with job/traineeship/PhD/post announcements:

See: www.cern.ch/juas and link “Job opportunities”

-talk to the lecturers, question them on that.

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

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. Fourrier Grenoble	IPAC 2012, New Orleans, 20-25 May

Future JUAS Promotions :

1 another possible grant for JUAS 2012 student to attend IPAC'12 (New Orleans - USA)

1 grant to attend IPAC'13 (China)

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 second course:
“Technology & Applications of Particles Accelerators”**

At course 1, after the last exam ...



.... a “raclette” to share good moments



**I wish you a pleasant stay
at JUAS 2012**