

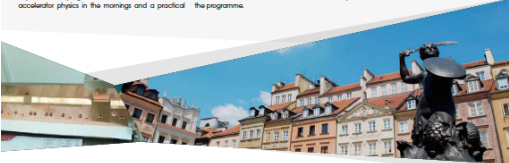


The CERN Accelerator School and the National Centre for Nuclear Research (NCBJ) are organizing a course on


## Advanced Accelerator Physics



27 September – 9 October, 2015  
Warsaw, Poland

The course will be of interest to physicists and engineers who wish to extend their knowledge of Accelerator Physics. The programme offers core lectures on accelerator physics in the mornings and a practical course with hands-on tuition in the afternoons. Participants will select one afternoon course from the three available. Sessions and tutorials will complete the programme.



23/09/15

 Contact: CERN Accelerator School  
CH - 1211 Geneva 23 Fax: +41 22 767 54 40  
cern.ch/school/CAS






















 

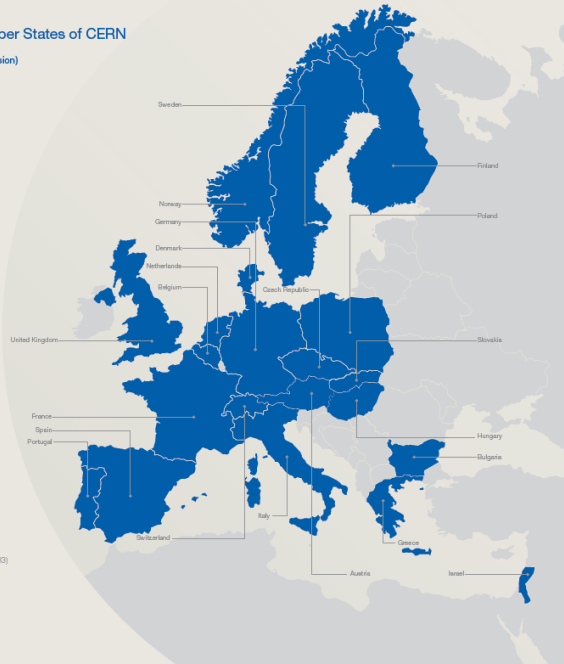
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### The CERN Accelerator School holds courses in all of the Member States of CERN

The twenty one Member States of CERN

Member States (Dates of accession)

	Austria (1959)
	Belgium (1953)
	Bulgaria (1999)
	Czech Republic (1993)
	Denmark (1953)
	Finland (1991)
	France (1953)
	Germany (1953)
	Greece (1953)
	Hungary (1992)
	Israel (2014)
	Italy (1953)
	Netherlands (1953)
	Norway (1953)
	Poland (1991)
	Portugal (1986)
	Slovakia (1993)
	Spain (1/1/1961-12/1968-1/1983)
	Sweden (1953)
	Switzerland (1953)
	United Kingdom (1953)





- Since 1983
- 61 schools
- All MS - 1
- 13 JAS

## The CERN Accelerator School

- Established at the beginning of 1983
  - To preserve and transmit knowledge accumulated, at CERN and elsewhere, on particle accelerators and colliders of all kinds
- This provided a framework for a series of courses
  - General accelerator physics, **now yearly**, alternating between
    - [Introduction to Accelerator Physics](#)
    - [Advanced Accelerator Physics](#)
  - Specialized topic in the field, **was yearly, now two per year**
- 61 schools held so far
  - 50 to 60 hours teaching in **1-2 week intensive residential courses**
- Occasional courses in the framework of the US-CERN-Japan-Russia Joint Accelerator School (JAS)
  - 13 schools held so far (since 1985)

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## Scope

### Accelerator Physics

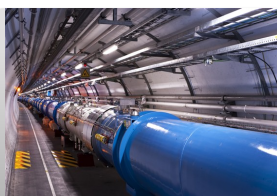
Relativity / Electro-Magnetic Theory / Transverse Beam Dynamics / Longitudinal Beam Dynamics / Linear Imperfections and Resonances / Synchrotron Radiation / Electron Beam Dynamics / Multi-Particle Effects / Non-Linear Dynamics / Beam Instabilities / Landau Damping / Beam-Beam Effects

### Accelerator Systems

Particle Sources / RFQ / LEBT RF Systems / Beam Instrumentation / Feedback Systems / Beam Injection and Extraction / Beam Transfer Power Convertors / Warm Magnets / Superconducting Magnets / Vacuum Systems Machine Protection Systems Radiation and Radioprotection

### Accelerators

Linear Accelerators  
Synchrotron Light Machines  
FELs  
FFAGs  
Cyclotrons  
Synchrotrons  
Colliders



### Applications

High Energy Physics  
Nuclear Physics  
Industrial Applications  
Medical Applications  
Cancer Therapy



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**The CERN Accelerator School holds courses in all of the Member States of CERN**

**The twenty one Member States of CERN**

Member States (Dates of accession)

- Austria (1959)
- Belgium (1953)
- Bulgaria (1990)
- Czech Republic (1992)
- Denmark (1963)
- Finland (1991)
- France (1963)
- Germany (1963)
- Greece (1963)
- Hungary (1992)
- Israel (2014)
- Italy (1963)
- Netherlands (1953)
- Norway (1963)
- Poland (1991)
- Portugal (1986)
- Slovakia (1993)
- Spain (1/1/95 - 12/1/95 - 1/1/95)
- Sweden (1963)
- Switzerland (1963)
- United Kingdom (1963)

2015, Otwock, Poland

**2015**

- Medical Applications
  - Vienna, Austria
- Advanced AP
  - Otwock, Poland
- Intensity Limitations
  - CERN

**2016**

- FELs and ERLs
  - DESY, Germany
- Introduction to AP
  - Istanbul, Turkey
- Injection & Extraction
  - CERN

**2017**

- Vacuum systems
  - Lund, Sweden
- Advanced AP
  - UK
- Beam cooling
  - CERN

Program (changed last week)

ADVANCED ACCELERATOR PHYSICS COURSE – OTWOCK, 2015

Time	Sunday 27/09	Monday 28/09	Tuesday 29/09	Wednesday 30/09	Thursday 01/10	Friday 02/10	Saturday 03/10	Sunday 04/10	Monday 05/10	Tuesday 06/10	Wednesday 07/10	Thursday 08/10	Friday 09/10
08:30		Opening Talks	Recap on Transverse Dynamics I	New Tools for Non Linear Dynamics I	New Tools for Non Linear Dynamics II	Non Linear Dynamics I	Non Linear Dynamics II		London Damping I	London Damping II	Beam Cooling	Tuning and Synchronization	
09:30		Recap on Transverse Dynamics II	Recap on Longitudinal Dynamics I	Beam Instabilities I	Beam Instabilities II	Instabilities in Linacs	Energy Recovery Linacs		W. Herr	W. Herr	M. Steck	A. Gallo	
10:30		B. Holzer	F. Tecker	G. Rumolo	G. Rumolo	M. Ferrario	A. Jankowiak		A. Wolski	A. Wolski	R. Cimino	H. Schmickler	
11:00		COFFEE	COFFEE	COFFEE	COFFEE	COFFEE	COFFEE		COFFEE	COFFEE	COFFEE	COFFEE	
12:00		Recap on Longitudinal Dynamics II	Introduction to Beam Diagnostics	Space Charge Dominated Beams	Insertion Devices	T1 Advanced Concepts	Beam Instabilities		Low Emittance Machines I	Non-linear Dynamics	High Brightness Beam Diagnostics	Low Emittance Machines	
13:00		F. Tecker	H. Schmickler	M. Ferrario	M. Calvi	Beam-beam	M. Ferrario		A. Wolski	A. Wolski	A. Cianchi	Feedback Systems I	
14:00		Introduction to Beam Instrumentation	Insertions	SC for Accelerators	Study	Study	Study		Study	Study	Accelerating polarized beams	Feedback Systems II	
15:00		R. Jones	B. Holzer	P. Lebrun	LUNCH	T. Pieloni	LUNCH		LUNCH	LUNCH	M. Bai	H. Schmickler	
16:00		LUNCH	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH		LUNCH	LUNCH	LUNCH	LUNCH	
17:00		Latex Cells	C1	C1	C1 in RF lab	C2	C1		C1 beam	C1		C1	
18:00		B. Holzer	C2	C2		C3	C2		C2	C2 beam		C2	
19:00		RF Measurement Concepts	C3	C3	C2 and C3	C1	C3		C3	C3		C3 beam	
20:00		F. Caspers	TEA	TEA	F R E E	F R E E	TEA		TEA	TEA	F R E E	TEA	
21:00		1 Slide 1 Minute	C1	C1			C1		Seminar	Seminar		Closing Talk	
22:00			C2	C2			C2						
23:00			C3	C3			C3						
24:00		Dinner	Dinner	Dinner	Dinner	Dinner	Dinner		Dinner	Dinner	Dinner	Dinner	

## Generalities

- 73 selected and offered a place
  - 7 unable to come, so 66

- All lectures at Hotel Boss
- All afternoon courses at NCBJ
  - Bus leaves hotel at 14.30

- Coffee breaks in Hotel Boss
  - Outside conference room
- Tea breaks in the University
  - In the (covered) patio

- Secretariat, Barbara Strasser
  - At Hotel Boss
  - At NCBJ, Room 238, PERXOWA

- Breakfast Lunch and Dinner all at the Hotel Boss

- Handouts provided each morning

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ADVANCED ACCELERATOR PHYSICS COURSE - OTWICK, 2015

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08:30		Opening Talks	Recap on Transverse Dynamics I	New Tools for Non Linear Dynamics I	New Tools for Non Linear Dynamics II	Y. Papadopoulos	Y. Papadopoulos		W. Herr	Low Emittance Machines I	Electron Cloud Effects and Cures	Feedback Systems I	Dinner
09:30		Recap on Transverse Dynamics II	Recap on Longitudinal Dynamics I	Beam Instabilities I	Beam Instabilities II	Energy Recovery Linacs	Energy Recovery Linacs		W. Herr	Low Emittance Machines II	Electron Cloud Effects and Cures	Feedback Systems I	Dinner
10:30	A	COFFEE	COFFEE	COFFEE	COFFEE	COFFEE	COFFEE	E	W. Herr	Low Emittance Machines III	Electron Cloud Effects and Cures	Feedback Systems I	Dinner
11:00	R	COFFEE	COFFEE	COFFEE	COFFEE	COFFEE	COFFEE	X	W. Herr	Low Emittance Machines III	Electron Cloud Effects and Cures	Feedback Systems I	Dinner
12:00	I	F. Tecker	H. Schuckler	M. Ferrario	M. Ferrario	M. Ferrario	M. Ferrario	C	W. Herr	Low Emittance Machines III	Electron Cloud Effects and Cures	Feedback Systems I	Dinner
13:00	V	Introduction to Beam Instrumentation	Insertions	SC for Accelerators	SC for Accelerators	Study	Study	U	W. Herr	Low Emittance Machines III	Electron Cloud Effects and Cures	Feedback Systems I	Dinner
14:30	L	R. Jones	B. Holzer	P. Lebrun	P. Lebrun	T. Pieloni	T. Pieloni	R	W. Herr	Low Emittance Machines III	Electron Cloud Effects and Cures	Feedback Systems I	Dinner
15:00	D	Lunch	Lunch	Lunch	Lunch	Lunch	Lunch	S	W. Herr	Low Emittance Machines III	Electron Cloud Effects and Cures	Feedback Systems I	Dinner
16:00	A	B. Holzer	C1	C1	C1	C1	C1	I	W. Herr	Low Emittance Machines III	Electron Cloud Effects and Cures	Feedback Systems I	Dinner
17:00	Y	RF Measurement Concepts	C2	C2	C2	C2	C2	N	W. Herr	Low Emittance Machines III	Electron Cloud Effects and Cures	Feedback Systems I	Dinner
17:30		F. Caspers	TEA	TEA	TEA	TEA	TEA		W. Herr	Low Emittance Machines III	Electron Cloud Effects and Cures	Feedback Systems I	Dinner
18:30		1 Slide 1 Minute	C2	C2	C2	C2	C2		W. Herr	Low Emittance Machines III	Electron Cloud Effects and Cures	Feedback Systems I	Dinner
19:30	Dinner	Dinner	Dinner	Dinner	Dinner	Dinner	Dinner		W. Herr	Low Emittance Machines III	Electron Cloud Effects and Cures	Feedback Systems I	Dinner
21:00									W. Herr	Low Emittance Machines III	Electron Cloud Effects and Cures	Feedback Systems I	Dinner

## Afternoon Courses

ADVANCED ACCELERATOR PHYSICS COURSE - OTWICK, 2015

Time	Sunday 27/09	Monday 28/09	Tuesday 29/09	Wednesday 30/09	Thursday 01/10	Friday 02/10	Saturday 03/10	Sunday 04/10	Monday 05/10	Tuesday 06/10	Wednesday 07/10	Thursday 08/10	Friday 09/10
08:30		Opening Talks	Recap on Transverse Dynamics I	New Tools for Non Linear Dynamics I	New Tools for Non Linear Dynamics II	Y. Papadopoulos	Y. Papadopoulos		W. Herr	Low Emittance Machines I	Electron Cloud Effects and Cures	Feedback Systems I	Dinner
09:30		Recap on Transverse Dynamics II	Recap on Longitudinal Dynamics I	Beam Instabilities I	Beam Instabilities II	Energy Recovery Linacs	Energy Recovery Linacs		W. Herr	Low Emittance Machines II	Electron Cloud Effects and Cures	Feedback Systems I	Dinner
10:30	A	COFFEE	COFFEE	COFFEE	COFFEE	COFFEE	COFFEE	E	W. Herr	Low Emittance Machines III	Electron Cloud Effects and Cures	Feedback Systems I	Dinner
11:00	R	COFFEE	COFFEE	COFFEE	COFFEE	COFFEE	COFFEE	X	W. Herr	Low Emittance Machines III	Electron Cloud Effects and Cures	Feedback Systems I	Dinner
12:00	I	F. Tecker	H. Schuckler	M. Ferrario	M. Ferrario	M. Ferrario	M. Ferrario	C	W. Herr	Low Emittance Machines III	Electron Cloud Effects and Cures	Feedback Systems I	Dinner
13:00	V	Introduction to Beam Instrumentation	Insertions	SC for Accelerators	SC for Accelerators	Study	Study	U	W. Herr	Low Emittance Machines III	Electron Cloud Effects and Cures	Feedback Systems I	Dinner
14:30	L	R. Jones	B. Holzer	P. Lebrun	P. Lebrun	T. Pieloni	T. Pieloni	R	W. Herr	Low Emittance Machines III	Electron Cloud Effects and Cures	Feedback Systems I	Dinner
15:00	D	Lunch	Lunch	Lunch	Lunch	Lunch	Lunch	S	W. Herr	Low Emittance Machines III	Electron Cloud Effects and Cures	Feedback Systems I	Dinner
16:00	A	B. Holzer	C1	C1	C1	C1	C1	I	W. Herr	Low Emittance Machines III	Electron Cloud Effects and Cures	Feedback Systems I	Dinner
17:00	Y	RF Measurement Concepts	C2	C2	C2	C2	C2	N	W. Herr	Low Emittance Machines III	Electron Cloud Effects and Cures	Feedback Systems I	Dinner
17:30		F. Caspers	TEA	TEA	TEA	TEA	TEA		W. Herr	Low Emittance Machines III	Electron Cloud Effects and Cures	Feedback Systems I	Dinner
18:30		1 Slide 1 Minute	C2	C2	C2	C2	C2		W. Herr	Low Emittance Machines III	Electron Cloud Effects and Cures	Feedback Systems I	Dinner
19:30	Dinner	Dinner	Dinner	Dinner	Dinner	Dinner	Dinner		W. Herr	Low Emittance Machines III	Electron Cloud Effects and Cures	Feedback Systems I	Dinner
21:00									W. Herr	Low Emittance Machines III	Electron Cloud Effects and Cures	Feedback Systems I	Dinner

## Afternoon Courses

- Chance to try something new!
  - C1 Beam Instrumentation and Diagnostics
  - C2 RF Measurement Techniques
  - C3 Optics Design and Corrections
- 16 hours of practical training
- Sign up for the course of preference (~equal numbers)
  - At the secretariat absolute latest by coffee on Tuesday AM

Course	Location	Coordinator	Tutors week 1	Tutors week 2
C1 BI	Room 223 Ground floor	H.Schmickler	K.Wittenburg, R.Jones, M.Gasior	K.Wittenburg, T.Lefevre
C2 RF	Rooms 128, 129 One level down	P.Kowina	F.Caspers, M.Wendt	F.Caspers, M.Wendt
C3 Optics	Room 251 Ground floor	W.Herr	B.Holzer, V.Kain, G.Sterbini, Y.Papaphilippou	V.Kain, G.Sterbini, Y.Papaphilippou

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## Afternoon Courses – some complications

- Afternoon of Thursday October 1<sup>st</sup>
  - C1 in RF lab, C2 and C3 free afternoon
- Afternoon of Friday October 2<sup>nd</sup>
  - C2 and C3 normal, C1 free afternoon

ADVANCED ACCELERATOR PHYSICS COURSE – OTWOC, 2015

Time	Sunday 27.09	Monday 28.09	Tuesday 29.09	Wednesday 30.09	Thursday 01.10	Friday 02.10	Saturday 03.10	Sunday 04.10	Monday 05.10	Tuesday 06.10	Wednesday 07.10	Thursday 08.10	Friday 09.10
08:30	Open Talk	Open Talk	Open Talk	Open Talk	Open Talk	Open Talk	Open Talk	Open Talk	Open Talk	Open Talk	Open Talk	Open Talk	Open Talk
09:30													
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- Afternoon of Monday 5<sup>th</sup>
  - C1 to live beam facility
- Afternoon of Tuesday 6<sup>th</sup>
  - C2 to live beam facility
- Afternoon of Thursday 8<sup>th</sup>
  - C3 to live beam facility
- Go to usual lab and you will be collected from there

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## Afternoon Courses – some complications

- Afternoon of Thursday October 1<sup>st</sup>
  - C1 in RF lab, C2 and C3 free afternoon
- Afternoon of Friday October 2<sup>nd</sup>
  - C2 and C3 normal, C1 free afternoon

ADVANCED ACCELERATOR PHYSICS COURSE – OTWICK, 2015

Time	Sunday 27/09	Monday 28/09	Tuesday 29/09	Wednesday 30/09	Thursday 01/10	Friday 02/10	Saturday 03/10	Sunday 04/10	Monday 05/10	Tuesday 06/10	Wednesday 07/10	Thursday 08/10	Friday 09/10
08:30	Opening Talks	Recap on Transverse Dynamics I	Recap on Transverse Dynamics II	Recap on Transverse Dynamics III	Recap on Transverse Dynamics IV	Recap on Transverse Dynamics V	Recap on Transverse Dynamics VI	Recap on Transverse Dynamics VII	Recap on Transverse Dynamics VIII	Recap on Transverse Dynamics IX	Recap on Transverse Dynamics X	Recap on Transverse Dynamics XI	Recap on Transverse Dynamics XII
09:30	A	B. Holzer	F. Tecker	G. Rumolo	G. Rumolo	M. Ferrario	A. Jankowiak	A. Wolski	A. Wolski	A. Wolski	A. Wolski	A. Wolski	A. Wolski
10:30	R	COFFEE	COFFEE	COFFEE	COFFEE	COFFEE	COFFEE	COFFEE	COFFEE	COFFEE	COFFEE	COFFEE	COFFEE
11:00	I	Recap on Longitudinal Dynamics I	Recap on Longitudinal Dynamics II	Recap on Longitudinal Dynamics III	Recap on Longitudinal Dynamics IV	Recap on Longitudinal Dynamics V	Recap on Longitudinal Dynamics VI	Recap on Longitudinal Dynamics VII	Recap on Longitudinal Dynamics VIII	Recap on Longitudinal Dynamics IX	Recap on Longitudinal Dynamics X	Recap on Longitudinal Dynamics XI	Recap on Longitudinal Dynamics XII
12:00	V	F. Tecker	H. Schwaible	M. Ferrario	T. Pieloni	M. Ferrario	A. Jankowiak	A. Wolski	A. Wolski	A. Wolski	A. Wolski	A. Wolski	A. Wolski
13:00	A	Introduction to Beam Instrumentation	Insertions SC for Accelerators	Insertions SC for Accelerators	Insertions SC for Accelerators	Insertions SC for Accelerators	Insertions SC for Accelerators	Insertions SC for Accelerators	Insertions SC for Accelerators	Insertions SC for Accelerators	Insertions SC for Accelerators	Insertions SC for Accelerators	Insertions SC for Accelerators
14:00	D	R. Jones	B. Holzer	P. Lebrun	M. Calvi	M. Calvi	M. Calvi	M. Calvi	M. Calvi	M. Calvi	M. Calvi	M. Calvi	M. Calvi
15:00	A	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH
16:00	Y	B. Holzer	C2	C2	C2	C2	C2	C2	C2	C2	C2	C2	C2
17:00	Registration	TEA	TEA	TEA	TEA	TEA	TEA	TEA	TEA	TEA	TEA	TEA	TEA
18:30	Buffet Dinner	R. Bailey	Welcome Drink	Dinner	Dinner	Dinner	Dinner	Dinner	Dinner	Dinner	Dinner	Dinner	Dinner

- Thursday October 1<sup>st</sup> PM
  - C2 and C3
  - Optional reactor visit
- Friday October 2<sup>nd</sup> PM
  - C1
  - Optional reactor visit
- Sign up if you want to take the reactor visit
  - At the secretariat absolute latest by coffee on Tuesday AM

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## Tutorials

Time	Sunday 27 September	Monday 28 September	Tuesday 29 September	Wednesday 30 September	Thursday 01 October	Friday 02 October	Saturday 03 October	Sunday 04 October	Monday 05 October	Tuesday 06 October	Wednesday 07 October	Thursday 08 October	Friday 09 October
08:30		Opening Talks	Recap on Transverse Dynamics II	Tools for Non Linear Dynamics I	Tools for Non Linear Dynamics II	Non Linear Dynamics I	Non Linear Dynamics II		Landau Damping I	Landau Damping II	Beam Cooling	Timing and Synchroni- zation	
09:30	A	Recap on Transverse Dynamics I	B. Holzer	W. Herr	W. Herr	Y. Papadopoulos	Y. Papadopoulos		W. Herr	W. Herr	M. Steck	A. Gallo	D E P A R T U R E
10:30	R	B. Holzer	F. Tecker	G. Rumolo	G. Rumolo	M. Ferrario	A. Jankowiak	E	A. Wolski	A. Wolski	R. Cimino	H. Schwaible	
11:00	I	COFFEE	COFFEE	COFFEE	COFFEE	COFFEE	COFFEE	X	COFFEE	COFFEE	COFFEE	COFFEE	
12:00	V	Recap on Longitudinal Dynamics I	Introduction to Beam Diagnostics	Space Charge Dominated Beams	Beam-Beam Effects	T1 Beam Instabilities	Advanced Concepts	U	Low Emittance Machines II	T2 Non-linear Dynamics	High Brilliance Beam Diagnostics	T3 Low Emittance Machines	A F T E R
12:00	A	F. Tecker	H. Schwaible	M. Ferrario	T. Pieloni	Insertion Devices	M. Ferrario	R	A. Wolski	Study	A. Cianchi	Feedback Systems II	
13:00	L	Introduction to Beam Instrumentation	Insertions SC for Accelerators	Insertions SC for Accelerators	Insertions SC for Accelerators	Insertions SC for Accelerators	Insertions SC for Accelerators	S	Study	Study	Accelerating Polarized Beams	Feedback Systems II	B R E A K F A S T
15:00	D	R. Jones	B. Holzer	P. Lebrun	M. Calvi	M. Calvi	M. Calvi	I	LUNCH	LUNCH	M. Bai	H. Schwaible	
16:00	A	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH	O	C1 Beam	C1		C1	
16:00	Y	B. Holzer	C2	C2	C2	C2	C2		C2	C2 Beam		C2	
17:00		Measurement Concepts	C3	C3	C3	C3	C3		C3	C3	F R E E	C3 Beam	
17:00		F. Carpentier	TEA	TEA	TEA	TEA	TEA		TEA	TEA		TEA	
17:30	Registration	1 Slide 1 Minute	C1	C1	C1	C1	C1		Seminar SOLARIS – New Synchrotron Light Source	Seminar Electron Accelerators Applications		Closing Talk	
18:30	Buffet Dinner	R. Bailey	Welcome Drink	Dinner	Dinner	Dinner	Dinner		M. Stankiewicz	A. Chmielewski	Dinner	Dinner	
19:30		Dinner	Dinner	Dinner	Dinner	Dinner	Dinner	Dinner	Dinner	Dinner	Dinner	Dinner	

## Tutorials

- Exercises set by the 3 lecturers mentioned
  - Tutorials for each in 3 (roughly) equal groups
    - TG1 Surnames A to H SZAFIROWA (plenary room)
    - TG2 Surnames I to O DIAMENTOWA
    - TG3 Surnames P to Z BUESZTYNOWA

Tutorial	TG1 (A to H)	TG2 (I to O)	TG3 (P to Z)
	SZAFIROWA	DIAMENTOWA	BUESZTYNOWA
T1 Beam Instabilities	G.Rumolo	M.Ferrario	Y.Papaphilippou
T2 New tools for Non-Linear Dynamics	Y.Papaphilippou	M.Bai	W.Herr
T3 Low Emittance Machines	W.Herr	Y.Papaphilippou	G.Sterbini

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## Things not yet mentioned

Time	Sunday 27 September	Monday 28 September	Tuesday 29 September	Wednesday 30 September	Thursday 1 October	Friday 2 October	Saturday 3 October	Sunday 4 October	Monday 5 October	Tuesday 6 October	Wednesday 7 October	Thursday 8 October	Friday 9 October
0830		Opening Talks	Recap on Transverse Dynamics II	Tools for Non Linear Dynamics I	Tools for Non Linear Dynamics II	Non Linear Dynamics I	Non Linear Dynamics II		Landau Damping I	Landau Damping II	Beam Cooling	Timing and Synchronization	
0930			B. Holzer	W. Herr	W. Herr	Y. Papaphilippou	Y. Papaphilippou		W. Herr	W. Herr	M. Steck	A. Gallo	
1030		Recap on Transverse Dynamics I	Recap on Longitudinal Dynamics II	Beam Instabilities I	Beam Instabilities II	Energy Recovery Linacs			Low Emittance Machines I	Low Emittance Machines III	Electron Cloud Effects and Cures	Feedback Systems I	
1100		B. Holzer	F. Tecker	G. Rumolo	G. Rumolo	M. Ferrario	A. Jankowski		A. Wolki	A. Wolki	R. Cimino	H. Schwaible	
		COFFEE	COFFEE	COFFEE	COFFEE	COFFEE	COFFEE		COFFEE	COFFEE	COFFEE	COFFEE	
		Recap on Longitudinal Dynamics I	Introduction to Beam Diagnostics	Space Charge Dominated Beams	Beam-Beam Effects	T1 Beam Instabilities	Advanced Concepts		Low Emittance Machines II	Non-linear Dynamics	High Brilliance Beam Diagnostics	T3 Low Emittance Machines	
1200		F. Tecker	H. Schwaible	M. Ferrario	T. Pieloni		M. Ferrario		A. Wolki		A. Cianchi		
1200		Introduction to Beam Instrumentation	Insertions	SC for Accelerators	Study	Insertion Devices	Study		Study	Study	Accelerating Polarized Beams	Feedback Systems II	
1300		R. Jones	B. Holzer	P. Lebrun		M. Calvi			LUNCH	LUNCH	M. Bai	H. Schwaible	
1500		Lattice Cells	C1	C1	C1 in RF lab	C2	C1		C1 Beam	C1		C1	
1600		B. Holzer	C2	C2		C3	C2		C2	C2 Beam		C2	
1600		Measurement Concepts	C3	C3	C2 and C3	C1	C3		C3	C3	F R E E	C3 Beam	
1700		F. Tecker	TEA	TEA	F R E E	C1	TEA		TEA	TEA		TEA	
1730		1 Slide 1 Minute	C1	C1	F R E E	F R E E	C1		Seminar SOLARIS – New Synchrotron Light Source	Seminar Electron Accelerators Applications		Closing Talk	
1830		C2	C2	C2			C2						
1830		C3	C3	C3			C3						
1930		Buffet Dinner	Welcome Drink	Dinner	Dinner	Dinner	Dinner		M. Stankovic	A. Chmielewski	Dinner	Dinner	
		Dinner	Dinner	Dinner	Dinner	Dinner	Dinner	Dinner	Dinner	Special Dinner			

## Things not yet mentioned

- 1 Slide / 1 Minute
- Study periods (4 of them)
  - To work on exercises, wherever you like
- Seminars and closing talk in the second week
  - At the institute in the main amphitheater
- Free Afternoons
  - Are exactly that (reactor visit is optional)
  - If you decide **not to take dinner at the hotel** (after the free afternoons or otherwise) **please let Barbara know** the day before so that we can inform the hotel
- Excursion on Sunday October 4, all day
  - We have reserved for everyone !
  - We need to know if you will come or not
  - Tell Barbara if you **do NOT want to come** by coffee Wednesday AM
- Group photo, Wednesday September 30<sup>th</sup> at 17.00

23/09/15

R. Bailey, CAS

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## Feedback

- Please, please, please  
– Give us your feedback

LEVEL	CONTENT	PRESENTATION
1 – Much too low	1 – Completely uninteresting	1 – Very poor
2 – Low	2 – Uninteresting	2 – Poor
3 – Just right	3 – Of some interest	3 – Fair
4 – Too high	4 – Interesting	4 – Good
5 – Much too high	5 – Very interesting	5 – Very good

