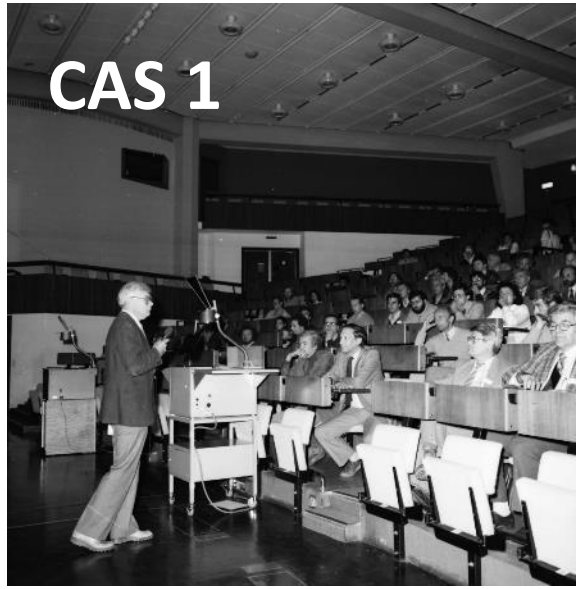


History and memories of the first 40 years of CAS

Maurizio Vretenar
CERN ATS-DO

CAS student, 1988-1993

CAS lecturer, 1998-2014

CAS admirer and supporter, all my career

The 1st CAS: October 1983

Antiprotons for colliding beam facilities

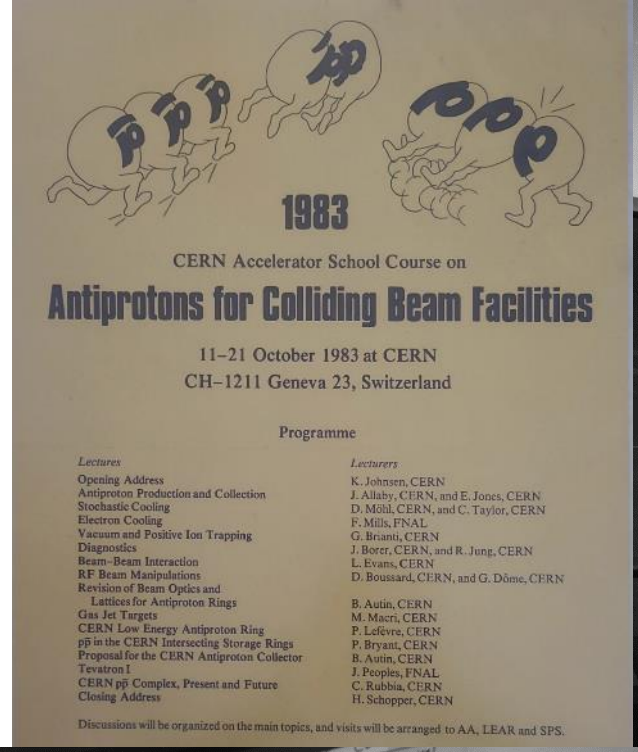
Organised by K. Johnsen and P. Bryant

The times:
- discovery of W+/- announced in January 1983
- huge success of pbar complex and SPS collider
- excitement at CERN and outside
- Nobel to Rubbia and Van der Meer in 1984

The needs:
- No high-level education on accelerators
- Experts are recycled physicists or engineers
- Need to transmit large amount of knowledge
- Connect HEP accelerators with other applications

The original format:
- 2 weeks of lectures by top experts from CERN
- At CERN Council Chamber
- Workshop-style (only few social events)

Wide success, >100 participants



1983

CERN Accelerator School Course on

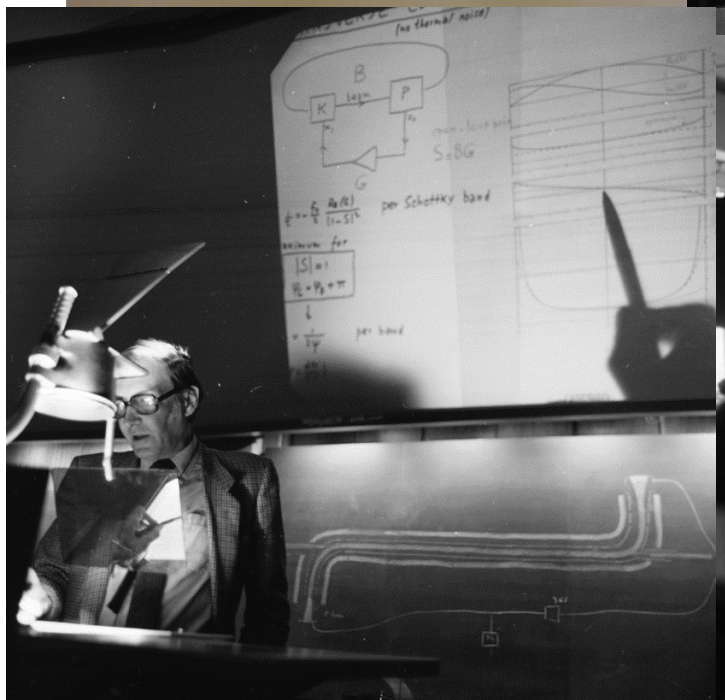
Antiprotons for Colliding Beam Facilities

11–21 October 1983 at CERN
CH–1211 Geneva 23, Switzerland

Programme

Lectures	*Lecturers*
Opening Address	K. Johnsen, CERN
Antiproton Production and Collection	J. Allaby, CERN, and E. Jones, CERN
Stochastic Cooling	D. Möhl, CERN, and C. Taylor, CERN
Electron Cooling	F. Mills, FNAL
Vacuum and Positive Ion Trapping	G. Brianti, CERN
Diagnostics	J. Borer, CERN, and R. Jung, CERN
Beam–Beam Interaction	L. Evans, CERN
RF Beam Manipulations	D. Boussard, CERN, and G. Dôme, CERN
Revision of Beam Optics and Lattices for Antiproton Rings	B. Autin, CERN
Gas Jet Targets	M. Macri, CERN
CERN Low Energy Antiproton Ring	P. Lefèvre, CERN
$p\bar{p}$ in the CERN Intersecting Storage Rings	P. Bryant, CERN
Proposal for the CERN Antiproton Collector	B. Autin, CERN
Tevatron I	J. Peoples, FNAL
CERN $p\bar{p}$ Complex, Present and Future	C. Rubbia, CERN
Closing Address	H. Schopper, CERN

Discussions will be organized on the main topics, and visits will be arranged to AA, LEAR and SPS.



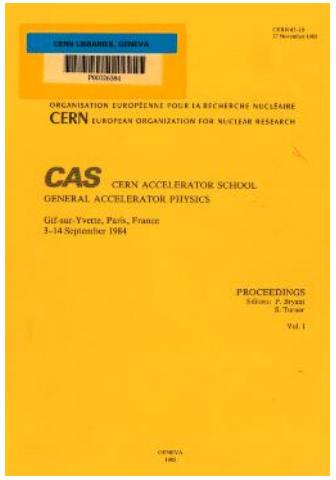
Changing format: the 1st Introductory CAS, 1984

1984: the first **Introductory CAS** at Gif-sur-Yvette, part of a bi-annual course programme

New format:
- **residential**, with study sessions, evening events and excursions
- **outside of CERN**, with visits to local laboratories
- lecturers from many **European laboratories**
- target: staff in accelerator laboratories, university departments and companies involved in accelerators

Huge success: **148** participants!

Bonus: **the CAS proceedings!**
The 44 Yellow Reports published so far became a reference for all students approaching accelerator science.



Biennial course programme

	General 2-week courses	Joint US-CERN 1-week courses	Specialised 1-week courses
YEAR 1	Basic General Accelerator Physics	Topical Course in Europe	Example: CERN 1983 Antiprotons for Colliding Beam Facilities.
YEAR 2	Advanced General Accelerator Physics	Topical Course in U.S.A.	Example: Frascati 1984 Generation of High Fields for Particle Acceleration

TIMETABLE FOR CERN GENERAL ACCELERATOR PHYSICS COURSE

Time	Monday 3 September	Tuesday 4 September	Wednesday 5 September	Thursday 6 September	Friday 7 September	Saturday 8 September
08.00 / 08.45	BREAKFAST					
	COACH ORSAY → SUPELEC					
09.15	Welcome / Historical Introduction K.O. Nielsen	Basic Course on Accelerator Optics K. Steffen	Insertions K. Steffen	Transverse Beam Dynamics E. Wilson	Introduction to Coherent Instabilities J.-L. Laclare	FREE
10.15	COFFEE					
10.45	Present-Day Accelerators K.O. Nielsen	Transverse Beam Dynamics E. Wilson	Transverse Beam Dynamics E. Wilson	Resonances and Imperfections E. Wilson	Linear Coupling E. Wilson	
11.45	Basic Course on Accelerator Optics K. Steffen	Longitudinal Beam Dynamics J.R. LeDuff	Dynamics in Linear Structures J.R. LeDuff	Transition K. Johnsen	Image and Space Charge Forces B. Zotter	
12.45	LUNCH					
14.30	Basic Course on Accelerator Optics K. Steffen	Longitudinal Beam Dynamics J.R. LeDuff	Dynamics in Linear Structures J.R. LeDuff	Discussion K. Steffen	Discussion J.R. LeDuff	
15.30	STUDY SESSION					
16.30	TEA/COFFEE					
17.00	Seminar Ion Sources N. Angert	Seminar Magnet System M. Harold	Seminar RF Systems C. Zettler	Seminar Vacuum Systems O. Gröbner	Seminar Control Systems P. Wolstenholme	
18.30	Cocktails and Buffet Campagnard	COACH SUPELEC → ORSAY				
19.15		FREE				
20.30		EVENING MEAL 20.15				
	COACH			Films "At CERN" (23 min) "Geneva Event" (54 min) "Travaux Souterrains du SPS" (16 min)		

Time	Sunday 9 September	Monday 10 September	Tuesday 11 September	Wednesday 12 September	Thursday 13 September	Friday 14 September
08.00 / 08.45	BREAKFAST					
	Possible trip to be organized to GANIL if support is adequate	COACH ORSAY → SUPELEC				
09.15		Introduction to Coherent Instabilities J.-L. Laclare	General Description of Collective Phenomena B. Zotter	Beam Losses and Lifetime A. Piwinski	Neutralisation Problems Y. Baconnier	Luminosity Measurement and Calculation K. Potter
10.15		COFFEE				
10.45		Introduction to Coherent Instabilities J.-L. Laclare	Extraction G.H. Rees	Beam Losses and Lifetime A. Piwinski	Beam Profiles K. Potter	Seminar Superconducting Magnets for Accelerators J. Perot
11.45		Injection G.H. Rees	Synchrotron Radiation K. Hübner	Stacking and Phase Displacement Acceleration E. Ciapala	Beam Transfer Lines P.J. Bryant	
12.45		LUNCH				
14.30		Choice of each visit to Saclay or Orsay	Radiation Damping K. Hübner	Discussion	Discussion	Review of Advanced Topics in Next Course and closing address K. Johnsen
15.30			STUDY SESSION			COACH
16.30			TEA/COFFEE			
17.00			Seminar Planned HEP Accelerators K. Johnsen	Seminar Light Sources S. Tazzari	Seminar Medical and Industrial Accelerators O. Tronc	
18.30			COACH			
19.15			FREE			
20.15			EVENING MEAL			
		Seminar Recent exciting Discoveries G. Conforto			Banquet	

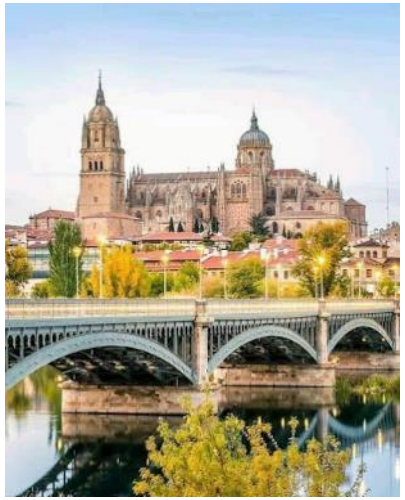
My first CAS: Salamanca, 1988

Organised in a resort close to Salamanca, Spain *(in the monastic style of education coming from the British roots of the first two heads of school)*

107 participants

2 important side effects:

1. **Networking** (students and lecturers)
2. Engaging **new EU countries** without accelerator traditions



The first group photos!

My second CAS: Advanced CAS School, Nordwijkerhout, 1990

More effective seclusion (a religious training centre in the Dutch countryside…).

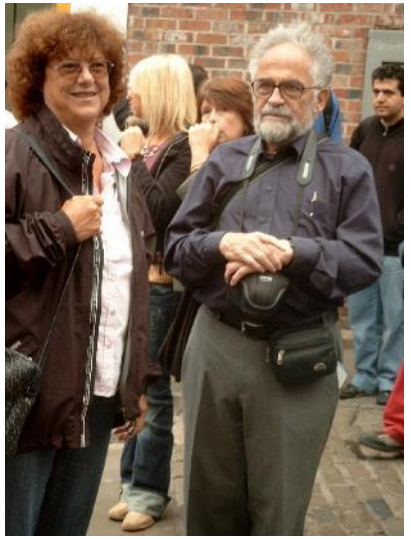
Same networking results & training of the future European leadership in particle accelerators.

Some memories from CAS golden years

Ted Wilson becomes Head of CAS in 1992. He will remain in charge for 10 years, marking the school with his characteristic Oxford style, supported by the omnipresent Suzanne Von Wartburg.

Swiss cowbell, used to call students after coffee breaks and to mark transformations of coordinates during lectures!

(from CERN Courier)

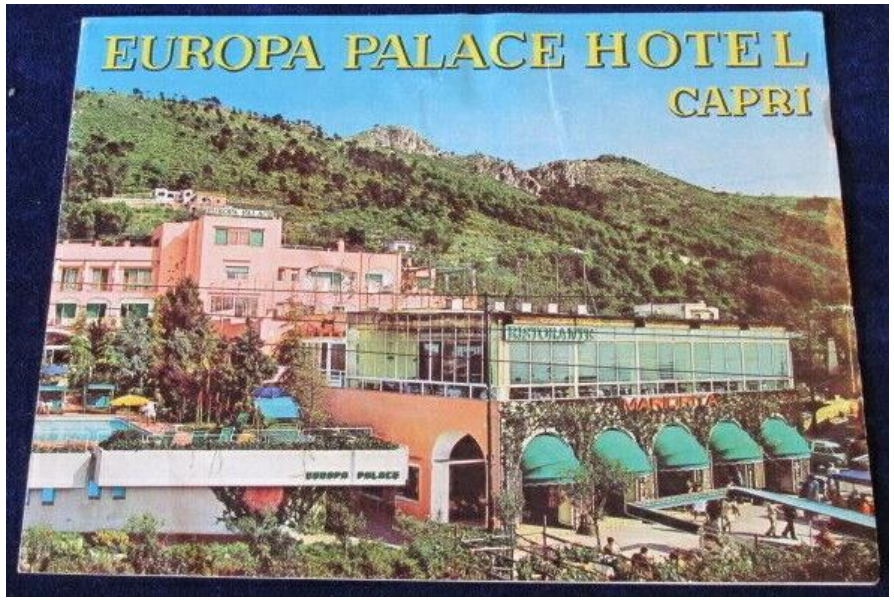


Albert Hofmann of CERN and CERN Accelerator School Secretary Suzanne von Wartburg at the recent CAS General Accelerator School in Jyvaskyla, Finland. How to get out of the capsized kayak position was not part of the formal curriculum but nevertheless was extensively studied.

Dancing at Loutraki, 2000

Superior locations: Capri (1993 and 1997)

Vittorio Giorgio Vaccaro



Radio-Frequency school, Capri 1993

CAS going global and progressing full steam!

Daniel Brandt inherits in 2002 the CAS School under the severe constraints of the LHC financial crisis (less lecturers, less schools,…). He brings it out of the troubles, in the open spirit of the past and opening to new countries: **Czech Rep., Portugal, Poland, Bulgaria, Slovakia**. Following demand, specialised courses go up to 2/year.

2003 synchrotron radiation school, Brunnen

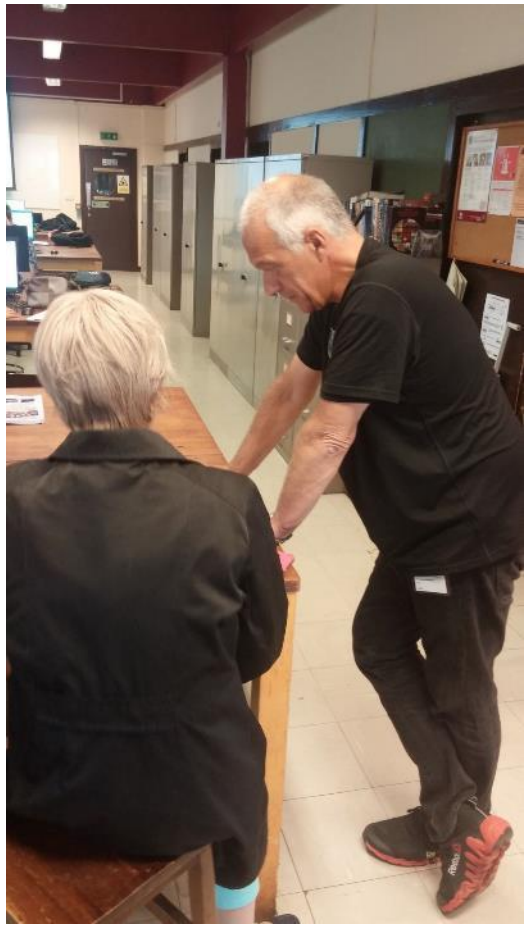
Celebrating the CAS in Trieste, 2005

The CAS roll of honour

Head of CAS		
Kjell Johnsen	1983	1985
Philip Bryant	1985	1991
Edmund Wilson	1992	2002
Daniel Brandt	2003	2010
Roger Bailey	2011	2017
Hermann Schmickler	2018	2021
Frank Tecker	2022	

CAS Secretary		
Suzanne Von Wartburg	1985	2005
Barbara Strasser	2005	2017
Delphine Rivoiron	2017	

CAS going into the modern age



In 2018 Hermann Schmickler takes over the school and launches an ambitious programme to revitalize the school addressing the request for more courses and more accelerator training in Europe (within the limits of available budgets):

- more schools, with introductory every year, advanced less frequent (and with less theory).
- more topical courses.
- new curriculum with hands-on learning and practical applications.
- more lecturers and students not from CERN, more focus on industry.

Some nice moments from recent schools

Kaunas 2022

Helsinki 2018

Disclaimers and acknowledgement:
- (most of) photos shown were taken before the European Data Protection regulation of 2018
- I warmly thank Kai Wittenburg who provided some of the photos of social events, and Noemi Caraban who has taken many photographs of recent schools

And the rest is the present!

CAS group photos through the years
cds.cern.ch

https://cds.cern.ch/record/2886692

Thanks to Frank and his team for organising this event, to Noemi for collecting all old CAS group photos on CDS, and…

long life the CAS!