



European Organization for Nuclear Research  
Organisation européenne pour la recherche nucléaire

European Laboratory for Particle Physics  
Laboratoire européen pour la physique des particules

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## Lukiolaisten tiedeopiskelu CERNissä 26. – 28.8.2019

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Jyväskylän Lyseon lukio ja Schildtin lukio (13 oppilasta ja 2 opettajaa)

### Maanantai 26.8.

#### **Yleiskuva CERNistä ja hiukkasfysiikan tutkimus**

08:50	Tapaaminen CERNin B-portilla	Tuija Karppinen
09:00 - 10:30	CERNin yleisesittely, rak. 304-1-007	Markus Nordberg
10:45 - 11:30	CERNin ensimmäinen kiihdytin (SC), rak. 300	M. Alhroob
11:30	Lounas (omakustanteinen)	
12:45	Tapaaminen rak. 500 edessä	Taina Onnela
13:00	Hiukkaskiihdyttimet/hiukkasilmaisimet ja hiukkasfysiikan tulevaisuuden haasteita, rak. 13-2-005	Juska Pekkanen
15:00	Lähtö CMS-koeasemalle, rak. 300 (passit mukaan)	
15:30 - 16:30	Tutustuminen CMS-koeasemaan, P5, Cessy	Juska Pekkanen
16:30 - 17:00	Lähtö takaisin CERNiin (paluu Globe parking)	M. Shah

### Tiistai 27.8.

#### **Aineen rakenteen standardimalli, Cloud ja konetekniikka**

08:45	Tapaaminen CERNin B-portilla	Tuija Karppinen
09:00	Universumi liitutaululla - teoreetikon näkökulma hiukkasfysiikkaan, rak. 32-1-A24	Risto Paatelainen
10:45 - 12:00	Sumukammion rakentaminen, S'Cool LAB, rak. 143-R-003	Jani Kalasniemi
12:00	Lounas (omakustanteinen)	

13:15	Tapaaminen rak. 500 edessä	Taina Onnela
13:30 - 14:30	Tutustuminen Cloud- kokeeseen, rak. 304-1-007	Hanna Manninen
15:00 - 16:00	Konetekniikka CERNissä, rak. 304-1-007 Tutustuminen konepajaan  Microcosm/Globe	Antti Kolehmainen Tommi Mikkola

### Keskiviikko 28.8.

#### **DataCentre, Antimateria ja Isolde**

08:20	Tapaaminen CERNin B-portilla	Tuija Karppinen
09:00 - 09:45	Tutustuminen CERNin tietojenkäsittelyyn, Vierailu Data Centre VisitPoint, rak. 513	Santeri Palomäki
10:00 - 11:00	Tutustuminen antimateriaohjelmaan rak. 513-1-024	Niels Madsen
11:00 - 11:45	Vierailu koeasemalle, rak. 193	Niels Madsen Antti Kolehmainen
11:45	Lounas (omakustanteinen)	
13:10	Tapaaminen rak. 508	Tuija Karppinen
13:15 - 14:15	Tutustuminen Isolde-kokeeseen, rak. 508  Globe/Microcosm	Joonas Konki

#### **Osallistujat**

Kynnäs Taina, opettaja  
Luoma Petri, opettaja

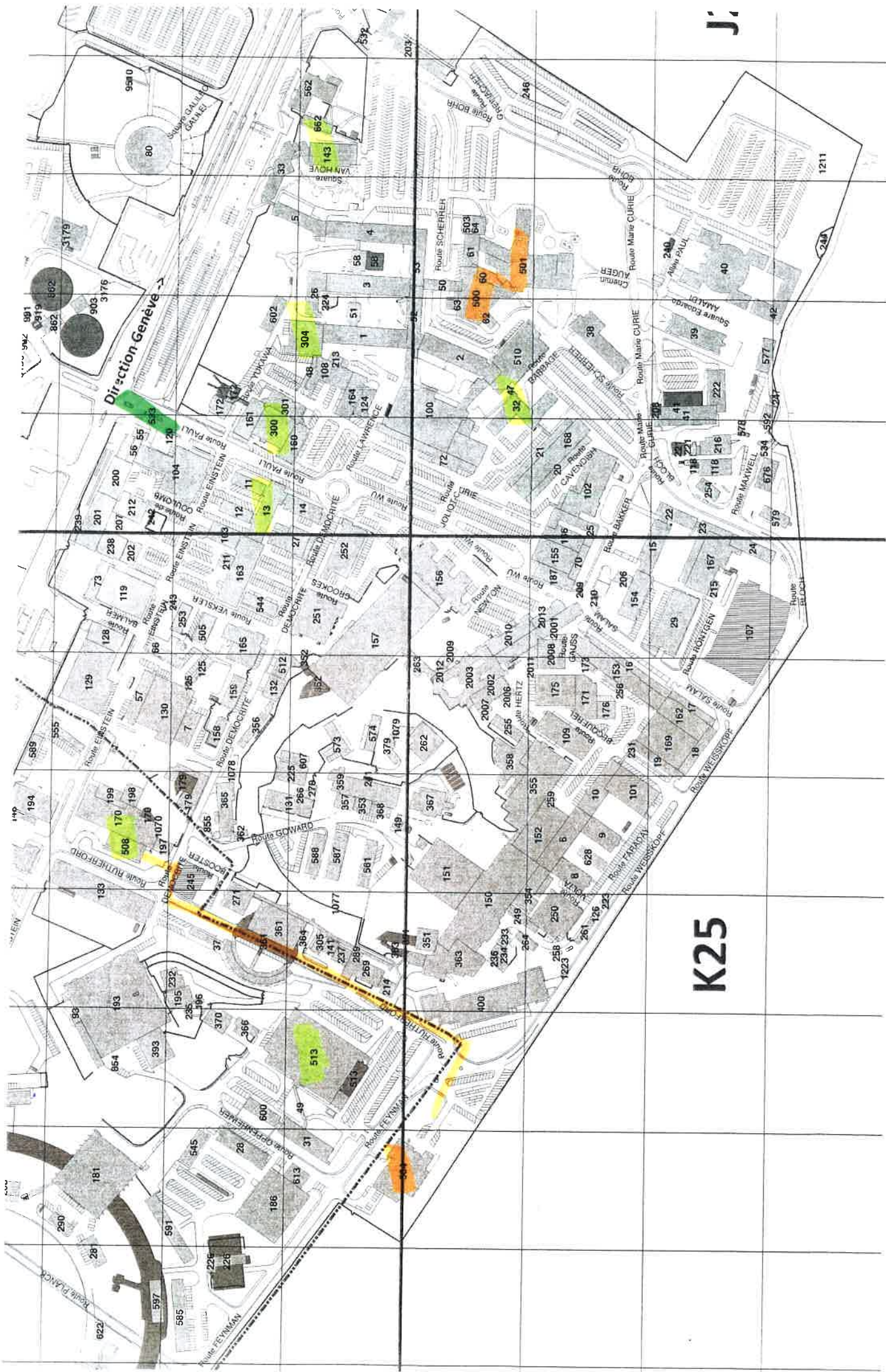
#### **Opiskelijat**

Dahlman Onni  
Hämäläinen Teemu  
Junkala Pietari  
Keinänen Vili  
Kivimäki Rasmus  
Koivisto Manu  
Koskelainen Niklas  
Lemmetty Henri  
Mattila Ilari  
Nurminen Väinö  
Pitkänen Jalmari  
Savolainen Juhani  
Toivanen Katariina

#### **Yhteyshenkilöt CERNissä:**

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(CERNin sisällä 79354)  
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CH-1211 GENEVA

Taina Onnela,  
Tuija Karppinen  
Suomi-toimisto, tel. +41 22 767 9855  
GSM +41 76 243 0665  
Ambulanssi/Palolaitos, puh. 74444 (häätänro)  
puh. 74848 (tiedustelut)







## BUDGET (at 13.03.2018)

Total of contributions

1148.2 MCHF

Member States' contributions

1 122.9 MCHF

Associated Member States contributions

25.3 MCHF

### Contributions from the Member States (%)

Austria	2.14
Belgium	2.71
Bulgaria	0.29
Czech Republic	0.93
Denmark	1.80
Finland	1.33
France	14.12
Germany	20.55
Greece	1.12
Hungary	0.61
Israel	1.61
Italy	10.43
Netherlands	4.61
Norway	2.71
Poland	2.82
Portugal	1.10
Romania	1.02
Slovakia	0.49
Spain	7.04
Sweden	2.69
Switzerland	4.02
United Kingdom	15.84

Total Member States: 100%

Additional contributions (% of total)

Associate Member States in the Pre-stage to Membership (Total: 0.34%)

Cyprus	0.08
Serbia	0.17
Slovenia	0.08

Associate Member States (Total 1.82%)

India	1.09
Lithuania	0.02
Pakistan	0.13
Turkey	0.50
Ukraine	0.07

### Observers

European Union, Japan, JINR, Russian Federation, UNESCO and USA.

President of the Council

Sijbrand de Jong (Netherlands)

Chairman of the Scientific Policy Committee

Richard Keith Ellis (United Kingdom)

Chairman of the Finance Committee

Ossi Malmberg (Finland)

# CERN QUICK FACTS 2018

## MANAGEMENT

### Directorate

Director-General

Director for Accelerators and Technology

Director for Finance and Human Resources

Director for International Relations

Director for Research and Computing

Fabiola Gianotti

Frédéric Bordry

Martin Steinacher

Charlotte Warakaulle

Eckhard Elsen

Council Support

Internal Audit

Legal Service

Occupational Health & Safety and Environmental Protection

Ombud

John Pym

John Steel

Eva-Maria Gröniger-Voss

Doris Forkel-Wirth

Pierre Gildemyn

Scientific Information Services

Jens Vigen

Education, Communications and Outreach

Host States Relations

Media and Press Relations

Member State Relations

Non-Member State Relations

Protocol Office

Relations with International Organisations

Ana Godinho

Friedemann Eder

Arnaud Marsollier

Pippa Wells

Emmanuel Tsessmelis

Stéphanie Molinari

Olivier Martin

### Departments

Beams (BE)

Engineering (EN)

Experimental Physics (EP)

Finance and Administrative Processes (FAP)

Human Resources (HR)

Industry, Procurement and Knowledge Transfer (IPT)

Information Technology (IT)

Site Management and Buildings (SMB)

Technology (TE)

Theoretical Physics (TH)

Paul Collier

Roberto Losito

Manfred Krammer

Florian Sonnemann

James Purvis

Thierry Lagrange

Frédéric Hemmer

Lluís Miralles

José Miguel Jiménez

Gian Francesco Giudice

### Project Management

Advanced Wakefield Experiment (AWAKE)

CERN Neutrino Platform

Extra Low ENergy Antiproton (ELENA)

Future Circular Collider Study (FCC)

High Luminosity LHC (HL-LHC)

LHC Injectors Upgrade (LIU)

Linear Collider Studies (CLIC and LCS)

Physics Beyond Colliders (PBC)

Worldwide LHC Computing Grid (WLCG)

Edda Gschwendtner

Marzio Nessi

Christian Carli

Michael Benedikt

Lucio Rossi

Malika Meddahi

Steinar Stapnes

Mike Lamont

Ian Bird



home.cern

## Accelerator-based experiments

**ISOLDE** Booster-ISOLDE isotope separator  
86 active experiments, 45 in preparation

## Non-accelerator experiments and detector developments

## Advanced accelerator developments

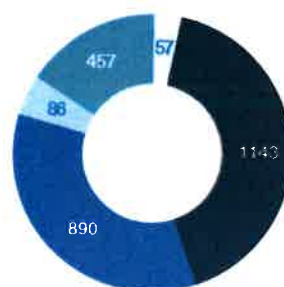
**AWAKE** at the SPS: Using 400 GeV protons to drive plasma wakefield acceleration

Employed members of the personnel

3440

2633  
807

\*Staff head count including externally funded. The number equates to 2556.4 FTEs (full-time equivalents) for 2017.



## Staff

- Research physicists

■ Engineers and scientists

- Technicians

## Craftspeople

- Administrators and office staff

14092

Participating in exchange of scientists  
Participating in training

698

579

Number of *users* as well as number of *institutes* (including universities) participating in the research programme

Member States	Users: 7162	Institutes: 518	Associate Member States in the pre-stage to Membership	Users: 75	Institutes: 9
Austria	104	10			
Belgium	153	11			
Bulgaria	44	4	Cyprus	17	1
Czech Rep.	247	12	Serbia	36	5
Denmark	66	7	Slovenia	22	3
Finland	118	15			
France	867	42			
Germany	1323	96	Associate Member States	Users: 403	Institutes: 55
Greece	132	14	India	206	24
Hungary	58	6	Pakistan	38	3
Israel	69	9	Turkey	124	19
Italy	1444	104	Ukraine	35	9
Netherlands	161	10			
Norway	91	6	Observers	Users: 3268	Institutes: 214
Poland	288	25	Japan	266	48
Portugal	103	12	Russia	1033	24
Romania	110	11	United States of America	1969	142
Slovakia	79	7			
Spain	336	29			
Sweden	96	10			
Switzerland	375	26	All other States	Users: 1328	Institutes: 201
United Kingdom	898	52			

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Education, Communications  
and Outreach Group  
June 2018  
CERN-Brochure-2017-002-ENG



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## Code of Conduct for Visitors to CERN

CERN is delighted to welcome you to its site for a tour, which we hope you will find enjoyable. As you probably know, CERN is a very large international science laboratory, where over 10 000 people of more than 100 different nationalities work side by side every day.

It is our pleasure to share a few hours of this extraordinary international adventure with you and we encourage you to immerse yourself in its culture and values. CERN's Code of Conduct states that its personnel must strive for excellence through integrity, commitment, professionalism, creativity and diversity.

During your tour, you too are requested to:

### **Respect differences and *diversity* by behaving considerately towards all the people working on the site.** For example:

- keep quiet while moving around the site as a sign of respect for the people working in their offices;
- refrain from entering an office for a closer look or to take a photo;
- respect people's right to privacy: CERN is happy for you to take photos as *souvenirs* of your visit, but taking photos of people working on the site or of their offices without their consent is not authorised.

### **Show your *commitment* by complying with the safety rules.** For example:

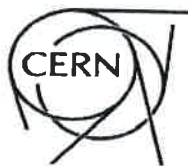
- be prepared to show your visitor card whenever one of our security guards asks you to do so;
- carry a valid identity document;
- comply with the rules in force on the CERN site and follow any instructions given by a guide, a CERN official or a security guard;
- do not enter any buildings or premises other than on your tour itinerary;
- refrain from any behaviour that CERN officials or security personnel deem to present an immediate hazard to people, property or the environment.

### **Adopt an attitude of *integrity* by acting responsibly towards people and equipment.** For example:

- avoid any behaviour that could disrupt CERN's regular or normal operations or those of the surrounding community, including any behaviour that breaches the peace or violates the rights of others;
- do not smoke in CERN buildings or, in particular, inside the Globe, on its external ramps or in the toilets;
- do not bring alcohol or any other prohibited substance or object onto the CERN site.

### **Special case for students staying in one of CERN's hotels or hostels:**

Treat the premises with respect and respect the other occupants' right to peace and quiet, particularly between 10 p.m. and 8 a.m.; remain silent after 11 p.m.



## Turvaohjeet CMS koeasema

Visitors must wear their visitor badge at all times during the visit.

**Flat or block-heeled, closed shoes** are required to be worn during the site visit. Official CMS visitor helmets will be provided and are the only ones to be used during the tour.

It is not possible to take bags or backpacks larger than 10 litres to the underground areas. CERN does not take any responsibility for items left unattended during the visit.

Persons equipped with any magnetic field sensitive medical device or implant (pacemaker, defibrillator, electronic medicine dispenser, hearing aid, metal implant ...) should contact us before the visit.

When the magnet is ON these persons will not be allowed in the underground premises.

Pregnant women should contact us in advance of their visit. They might not be allowed underground.

People suffering from claustrophobia or epilepsy are not allowed in the underground areas.

Children below 8 y/o are not authorised to join the visit.

Children younger than 10 years old & persons not fit to climb stairways, should contact us in advance for safety reasons.

**No eating and drinking on the surface and underground tour**, except when on dedicated areas.

Please, make sure you stay with your guide during the whole visit. Should an alarm occur please follow the instructions given by your guide who will take you to the surface using the lift.

***For the safety of those working at or visiting the CMS site, CMS reserves the right to cancel visits at short notice.***

## **Turvaohjeet; antimaterian koeasema (AD)/Isolde**

**You must wear closed shoes, no high heels**, no pregnant women, no active implants! It is **strictly forbidden to eat/drink or smoke!**

## **Turvaohjeet; vierailu konepajalla (MME) Konetekniikka CERNissä luennon yhteydessä**

**Only closed, flat shoes are allowed.**

The group shall contain maximum 12 visitors.

All visitors must be 10 years or older.

If the group contains visitors younger than 16 years, it shall be accompanied by at least 2 adults.

*To be repeated to the participants at the beginning of the visit:*

1. Follow the guide. Do not go outside the marked area.
2. Do not touch anything unless authorised. The material can be dangerous or fragile.
3. Pay attention to barriers and warning signs.
4. Do not watch a welding arc.
5. Watch your step for obstacles on the floor.

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CERNiin liittyvä materiaalia löytyy sivuilta

<http://press.cern/press-kit>