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- Organisational Structure of EPPSU 2020
- Open Symposium in Granada
- Physics input and organizational matters for the Strategy Update

## Organisation

- Decision making body - CERN Council
- Drafting of the Strategy Update document - responsibility of the European Strategy Group (ESG)
- Scientific Input to the Strategy Update - responsibility of the Physics Preparatory Group (PPG)
- Coordinating body - the Strategy Update Secretariat (SUS)

## Strategy Secretariat

- H. Abramowicz (Chairperson)
- J. D'Hondt (ECFA Chairperson, *ECFA: European Committee for Future Accelerators*)
- K. Ellis (SPC Chairperson, *SPC: Science Policy Committee @ CERN*)
- L. Rivkin (European LDG Chairperson, *LDG: Lab Directors Group*)

Contact: [EPPSU-Strategy-Secretariat@cern.ch](mailto:EPPSU-Strategy-Secretariat@cern.ch)

## Physics Preparatory Group

- *Strategy Secretariat*
- Caterina Biscari (ES), Belen Gavela (ES), Beate Heinemann (DE), Krzysztof Redlich (PL) - *delegates nominated by SPC*
- Stan Bentvelsen (NL), Paris Sphicas (GR), Marco Zito (FR), Antonio Zoccoli (IT) - *delegates nominated by ECFA*
- Gian Giudice (CERN) - *nominated by CERN*
- Shoji Asai (Japan) and Xinchou Lou (China) - *delegates from Asia nominated by ICFA*
- Marcela Carena (US) and Brigitte Vachon (Canada) - *delegates from the Americas nominated by ICFA*

Responsible to organize the Open Symposium and to deliver to the European Strategy Group (ESG) a Briefing Book.

## Composition of the ESG

European Strategy Group (ESG) composition, adopted by Council, December 2013:

- the Strategy Secretary (acting as Chairperson),
- one representative appointed by each CERN Member State,
- one representative for each of the Laboratories participating in the major European Laboratory Directors' meeting, including its Chairperson,
- the CERN Director-General,
- the SPC Chairperson,
- the ECFA Chairperson.

Responsible to deliver a draft Strategy Update to Council.

### Invitees

- the President of the CERN Council,
- one representative from each of the Associate Member States,
- one representative from each Observer State,
- one representative from the European Commission and JINR,
- the Chairpersons of ApPEC, FALC, ESFRI, and NuPECC,
- the members of the Physics Preparatory Group.

## Role of the ESG

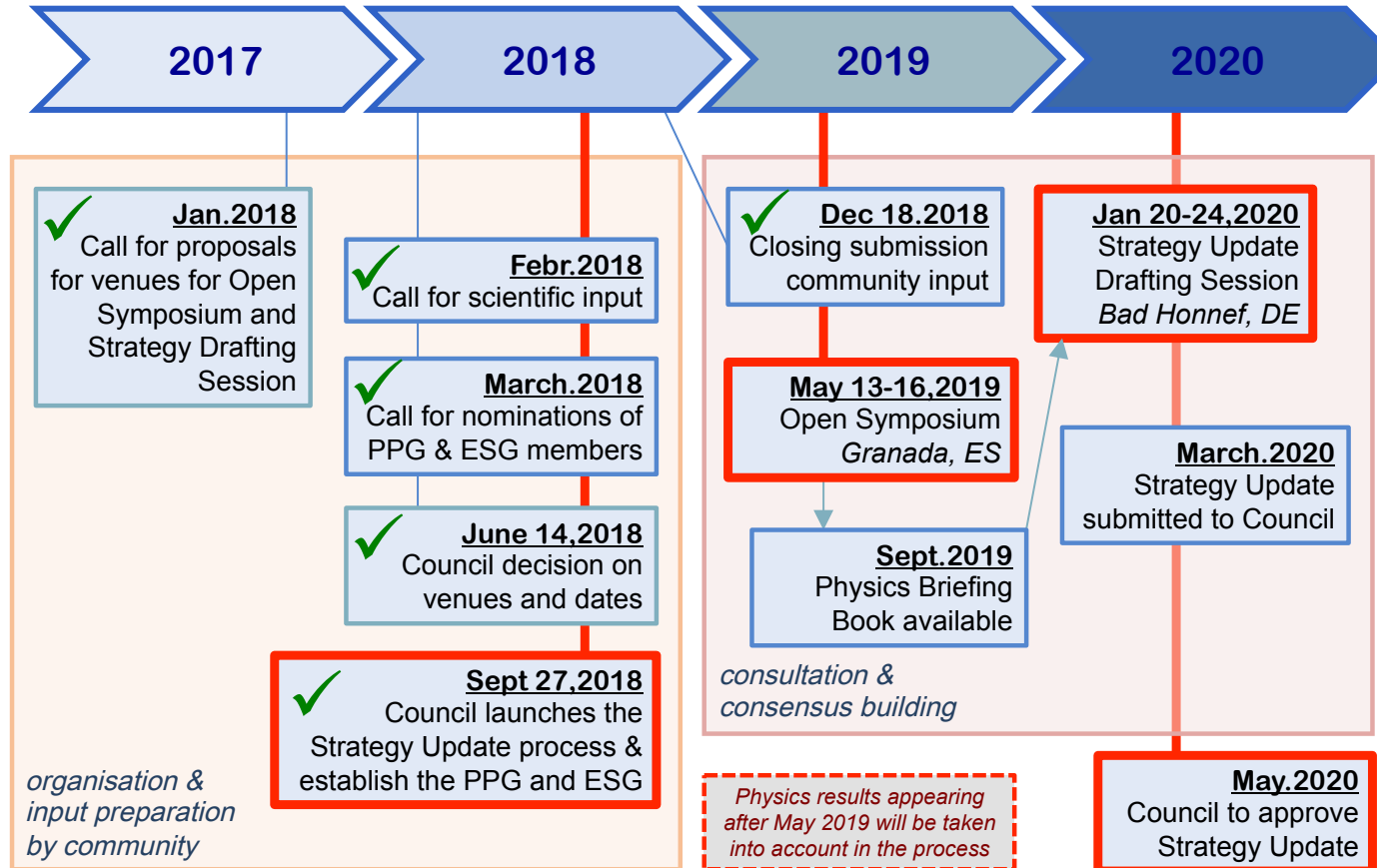
### Role of the ESG (section 3.2a of the CERN/3092/Rev.2)

- To establish a proposal for the periodic update of the medium- and long-term European Strategy for Particle Physics for submission to the Council for approval
- To draft the Strategy update proposal taking into account, inter alia, the scientific input submitted by the Physics Preparatory Group (drafting session in January 2020)
- To endorse the proposal by consensus prior to the submission to the Council for approval (March 2020)

### This implies

- Revisiting the previous strategy update
- Proposing additional themes in support of (the realisation of) the scientific programme
- Forming working/discussion groups around selected themes for the current update
- Prioritising the scientific programme

## Timeline




# Open Symposium - Granada/Spain

Open Symposium - 13-16 May 2019  
<https://cafpe.ugr.es/eppsu2019>


- Plenary opening and plenary summary sessions
- Discussions on 8 themes organized in parallel sessions (EWK Physics, Flavour/CP, Dark Sector, Accelerators, BSM, Strong Interactions, Neutrino, Instrumentation and Computing)
- Registration will close April 15
- Currently 541 participants

CERN Council Open Symposium on the Update of




## European Strategy for Particle Physics

13-16 May 2019 - Granada, Spain




Physics Preparatory Group	Local Organizing Committee	
Halina Abramowicz (Chair)	Francisco del Águila	Juan José Hernández
Shoji Asai	Antonio Bueno (Chair)	Mario Martínez
Stan Bentvelsen	Alberto Casas	Carlos Salgado
Caterina Biscari	Nicanor Colino	Benjamin Sánchez Gimeno
Marcela Carena	Javier Cuevas	José Santiago
Jorgen D'Hondt	Elvira Gámiz	
Keith Ellis	María José García Borge	
Belen Gavela	Igor García Irastorza	
Gian Giudice	Eugeni Graugés	
	Leonid Rivkin	
	Paris Sphicas	
	Brigitte Vachon	
	Marco Zito	
	Antonio Zoccoli	

<https://cafpe.ugr.es/eppsu2019/>  
 eppsu2019@pcgr.org



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## Submitted Inputs

Track ID	Granada sessions	Description	Conveners	
1		Large experiments and projects	PPG/ESG	40
2		National road maps	ESG	42
7	B1	Electroweak Physics (physics of the W, Z, H bosons, of the top quark, and QED)	Keith Ellis	Beate Heinemann 21
8	B2	Flavour Physics and CP violation (quarks, charged leptons and rare processes)	Belen Gavela	Antonio Zoccoli 27
5	B3	Dark matter and Dark Sector (accelerator and non-accelerator dark matter, dark photons, hidden sector, axions)	Marcela Carena	Shoji Asai 27
3	B4	Accelerator Science and Technology	Caterina Biscari	Lenny Rivkin 51
4	B5	Beyond the Standard Model at colliders (present and future)	Gian Giudice	Paris Sphicas 20
10	B6	Strong Interactions (perturbative and non-perturbative QCD, DIS, heavy ions)	Krzysztof Redlich	Jorgen D'Hondt 31
9	B7	Neutrino Physics (accelerator and non-accelerator)	Stan Bentvelsen	Marco Zito 23
6	B8	Instrumentation and Computing	Xinchou Lou	Brigitte Vachon 35
11		Other (communication, outreach, strategy process, technology transfer, individual contributions,...)	ESG	

	1	2	3	4	5	6	7	8	9	10	11	
	ESG	ESG	B4	B5	B7	B8	B1	B2	B3	B6	ESG	
<i>Sum of submissions per track, counting all options selected by the submitter</i>	87	31	42	41	54	34	38	38	45	52	33	495
<i>Sum of submissions per track, counting clear primary track proposals (dark green)</i>	16	33	18	5	8	10	6	9	18	19	12	154
<i>Sum of submissions per track, counting tentative primary track proposals (yellow)</i>	0	0	2	0	1	0	0	1	1	0	1	6
<i>Sum of submissions per track, counting only secondary track proposals (light green)</i>	24	9	31	15	14	25	15	17	8	12	9	179
<i>Sum of submissions per track, counting all tracks assigned by the PPG (i.e. all coloured boxes)</i>	40	42	51	20	23	35	21	27	27	31	22	339

## Granada - Plenary Sessions

08:00	<b>Registration</b>		
	<i>Granada Conference Center</i>	08:00 - 09:00	
09:00	<b>Welcome</b>		
	<i>Granada Conference Center</i>	09:00 - 09:10	
	<b>Overview of the Symposium</b>	<i>Antonio Bueno Villar</i>	
	<i>Granada Conference Center</i>	09:10 - 09:20	
	<b>Goals of the Symposium</b>	<i>Halina Abramowicz</i>	
	<i>Granada Conference Center</i>	09:20 - 09:30	
	<b>Implementation of the 2013 European Strategy Update</b>	<i>Fabiola Gianotti</i>	
	<i>Granada Conference Center</i>	09:30 - 10:05	
10:00	<b>Outstanding Questions in Particle Physics</b>	<i>Prof. Pilar Hernandez</i>	
	<i>Granada Conference Center</i>	10:05 - 10:40	
			<b>Monday plenary talks</b>
			<i>Granada Conference Center</i>
			10:40 - 11:10
			<b>State of the art and challenges in accelerator technology - Past and present</b>
			<i>Akira Yamamoto</i>
			<i>Granada Conference Center</i>
			11:10 - 11:45
			<b>Future – Path to very high energies</b>
			<i>Vladimir Shiltsev</i>
			<i>Granada Conference Center</i>
			11:45 - 12:20
			<b>Technological challenges of particle physics experiments</b>
			<i>Francesco Forti</i>
			<i>Granada Conference Center</i>
			12:20 - 12:55
			<b>Computing challenges of the future</b>
			<i>Simone Campana</i>
			<i>Granada Conference Center</i>
			12:55 - 13:30
			<b>Lunch</b>

Monday, Tuesday afternoon parallel sessions (EWK, ACC, FCP, DMS)  
 Tuesday, Wednesday morning parallel sessions (NEU, BSM, QCD, INC)

## Granada - Plenary Sessions

	Granada Conference Center	13:30 - 14:45	
15:00	<b>Perspective on the European Strategy from the Americas (20'+10')</b>	Young-Kee Kim	<b>Wednesday afternoon plenary talks</b>
	Granada Conference Center	14:45 - 15:15	
	<b>Perspective on the European Strategy from Asia (20'+10')</b>	Prof. Geoffrey Norman Taylor	
	Granada Conference Center	15:15 - 15:45	
	<b>ApPEC Roadmap (20'+5')</b>	Teresa Montaruli	
16:00	Granada Conference Center	15:45 - 16:10	
	<b>NuPPEC long term plan (20'+5')</b>	Marek Lewitowicz	
	Granada Conference Center		
	<b>Coffee break</b>		
	Granada Conference Center	16:35 - 17:05	
	<b>Programs of Large European and National Labs (25'+10')</b>	Pierluigi Campana	
	Granada Conference Center	17:05 - 17:40	
	<b>Overview of National Inputs to the Strategy Update (25'+10')</b>	Siegfried Bethke	
18:00	Granada Conference Center	17:40 - 18:15	
	<b>Education, Communication and Outreach (20'+5')</b>	Perrine Royole-Degieux	
	Granada Conference Center	18:15 - 18:40	
	<b>Accelerator Science and Technology</b>	Caterina Biscari et al.	
19:00	Granada Conference Center	18:40 - 19:30	

## Granada - Sessions

### Parallel Sessions - Concept of PPG

- Invite expert speakers to summarise submitted input
- Prepare set of questions to be debated (will be posted on Granada website)
- Leave time for discussions
- Organise common discussion blocks
- Invite scientific secretaries to be involved till Briefing Book completed
- Pose example questions for discussion

### Thursday summary talks

14:00	Granada Conference Center	13:00 - 14:15
	Instrumentation and Computing	Brigitte Vachon et al.
	Granada Conference Center	14:15 - 14:55
15:00	Discussion and Closeout	
	Granada Conference Center	14:55 - 16:00

09:00	Neutrino Physics (accelerator and non-accelerator)	Marco Zito et al.	08:30 - 09:10
	Granada Conference Center		
	Flavour Physics and CP violation (quarks, charged leptons and rare processes)	Antonio Zoccoli et al.	09:10 - 09:50
	Granada Conference Center		
10:00	Dark matter and Dark Sector (accelerator and non-accelerator dark matter, dark photons, hidden sector, axions)	Marcela Silvia Carena Lopez et al.	09:50 - 10:30
	Granada Conference Center		
	Coffee break		10:30 - 11:00
	Granada Conference Center		
11:00	Beyond the Standard Model at colliders (present and future)	Gian Giudice et al.	11:00 - 11:40
	Granada Conference Center		
	Strong Interactions (perturbative and non-perturbative QCD, DIS, heavy ions)	Jorgen D'Hondt et al.	11:40 - 12:20
	Granada Conference Center		
12:00	Electroweak Physics (physics of the W, Z, H bosons, of the top quark, and QED)	Beate Heinemann et al.	12:20 - 13:00
	Granada Conference Center		
13:00	Lunch		

## Examples of Big Questions (examples)

### Flavour Physics and CP violation

- What is the optimal precision on the CKM matrix and are the electroweak and the putative flavour scales related?
- Lepton Flavour Violation: can it be observed for charged leptons and is it connected to lepton universality?
- Is there CP violation in flavour-blind processes, and what is the explanation of the strong CP problem?
- What could the impact of the Dark Sector be in flavour physics and vice versa?

### Dark matter and dark sector

- How do we search for Dark Matter, depending on its properties?
- What are the main differences between light Hidden Sector DM and WIMPs? How broad is the parameter space for the QCD axion?
- How will Direct and Indirect DM Detection experiments inform/guide accelerator searches and vice-versa?
- How to compare results of different experiments in the most model independent way possible? (What are the most promising experimental programs, approved or proposed to cover different regions of parameter space?)

## Examples of Big Questions

### Neutrino Physics

- What is the optimal strategy for a complete set of measurements of neutrino properties, and what is the origin of neutrino masses?
- Is the existing experimental program sufficient to confirm or exclude the existence of sterile neutrino states with masses in the  $eV/c^2$  range?
- How can cosmic neutrinos help to pin-down neutrino properties - oscillations and mass hierarchy?
- How can gravitational waves help to understand the Dark Sector of the Universe?

### Strong interactions

- What are the experimental and theoretical pre-requisites to reach an adequate precision of perturbative and non-perturbative QCD predictions at the highest energies?
- What can be learned from beams-on-target experiments at current and potential future (pre-)accelerators to test strong interactions?
- How to probe the QGP equation of state and to establish whether there is a 1st order phase transition at high baryon density?
- What is known about the make-up of the proton (mass, radius, spin, etc.) and how to extract it?
- What is the role of strong interactions at very low and very high (up to astrophysical) energies?

## Examples of Big Questions

### **Instrumentation and Computing**

- How should HEP computing evolve in order to support future scientific programs and their specific needs?
- What R&D activities must be supported and how, in order to enable this computing evolution?
- What areas of instrumentation R&D should be supported and how, in order to meet the needs of future experimental programmes?
- How to preserve knowledge, technical expertise and train the future generation of experts in detector/instrumentation R&D?

### ESG - Organisational Matters 2013 vs 2020

In parallel to the discussion on scientific issues, ESG deals with organizational and other matters through discussions in working groups (WG)

During the 2013 Strategy update, 5 WGs were set up → 6 WGs for 2020

WG1 - Mandate and organisational structure for the Council for the European Strategy and its implementation (to be handled by the President's Group) replaced by →

*Social and career aspects for the next generation*

WG2 - Organisational structure for European participation in global projects, including the role and definition of the National Laboratories and the CERN Laboratory in the European Strategy;

WG3 - Relations with external bodies, in particular EU-related;

WG4 - Knowledge and technology transfer, relations with industry;

WG5 - Outreach, education and communication

**WG6 - Sustainability and environmental impact**