



LABORATÓRIO DE INSTRUMENTAÇÃO
E FÍSICA EXPERIMENTAL DE PARTÍCULAS
partículas e tecnologia



ECO-2

[FROM *the* {UN}KNOWN]

[TO *the* PUBLIC]

Pedro Abreu for the LIP-ECO group, Jornadas do LIP, Évora, Feb.2018

Activities LIP-ECO[utreach] 2016-2017

Regular Activities

Around the Exhibition

"Particles: from the Higgs boson to Dark Matter"

- ~3 weeks at Univ.Minho, Braga – 17/2-9/3
- ~3 weeks at Univ.Coimbra – 5-23/4
- ~3 weeks at Univ.Lisboa – 2/5-25/5
LIP 30th anniversary celebrated @ Rectory U.L.
- **+6 Months** @ Planetário de Lisboa,
started on the European Researcher's Night 2016
 > **6 Public Sessions** @ Planetário
 Antimatter/Fernando Barão, Quarks&Gluons/Helena Santos, Neutrinos/Sofia Andringa, Dark Matter/Isabel Lopes, Detectors/Alberto Blanco, Higgs boson/Patrícia Conde-Muñoz
 > Closing **Public Session (extra)** on the 3rd of May
 Particle and Astroparticle physics in the XXIst century/Mário Pimenta

• Masterclasses

- Science in the Summer (Ciência Viva programme; 1 in Coimbra [3 stds], 2 in Lisboa [14 stds])

• CERN Portuguese Language Teachers Programmes

- High-School Students Internship Programme@CERN

• European Researcher's Nights + Dark Matter session

- Outreach seminars at schools (32 B+HS, 3 Primary Sc.)

• +Internationalization (IPPOG, EPPCN, HST)

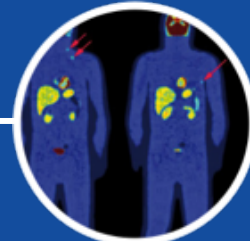
+SPF

Special Public Sessions

- **Arthur McDonald @ The Knowledge Pavillion**
6 September 2016, full house (200+ people)
- **Fabiola Gianotti @ Univ. Évora**
15 September 2017, full house (250+ people)

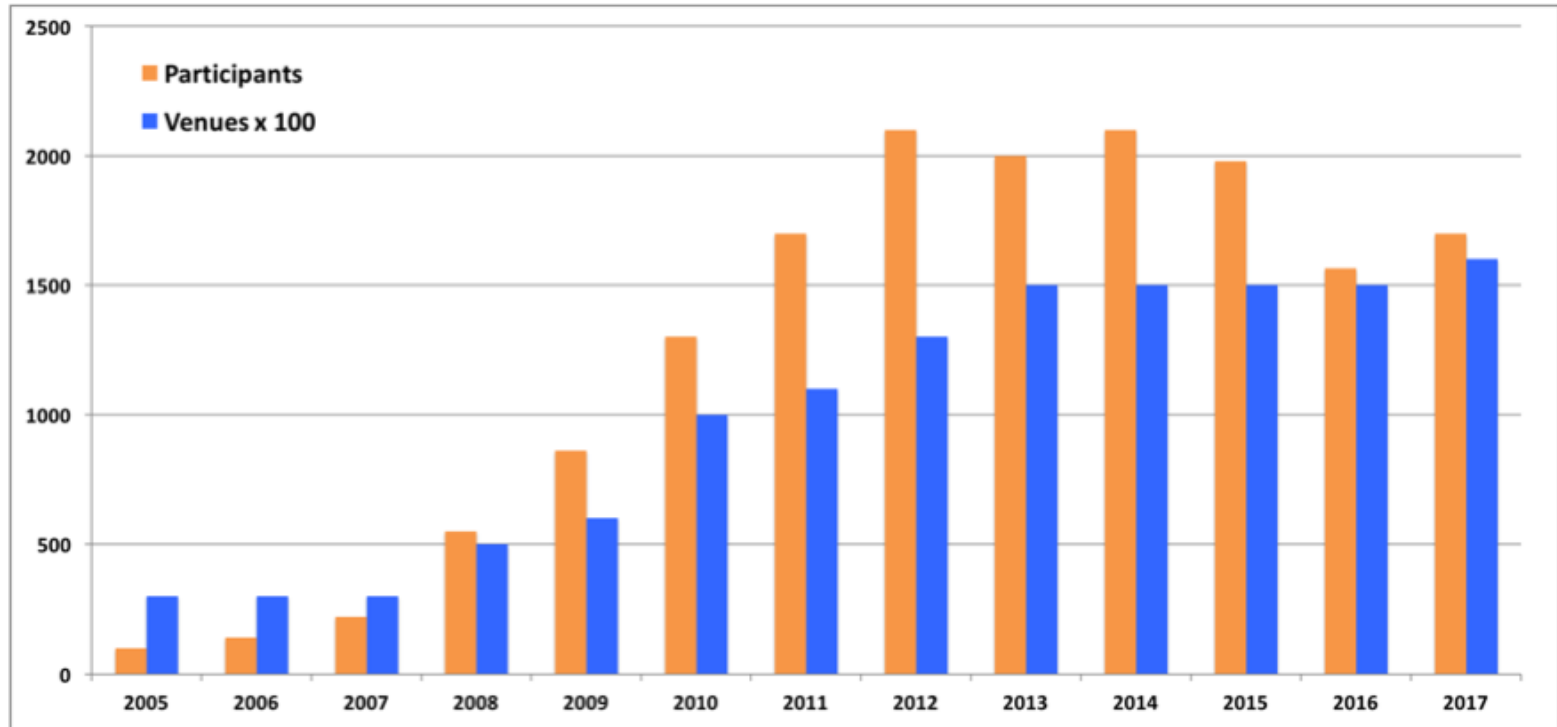
1. Masterclasses

IPPOG's International Masterclasses
in Particle Physics – Hands on CERN



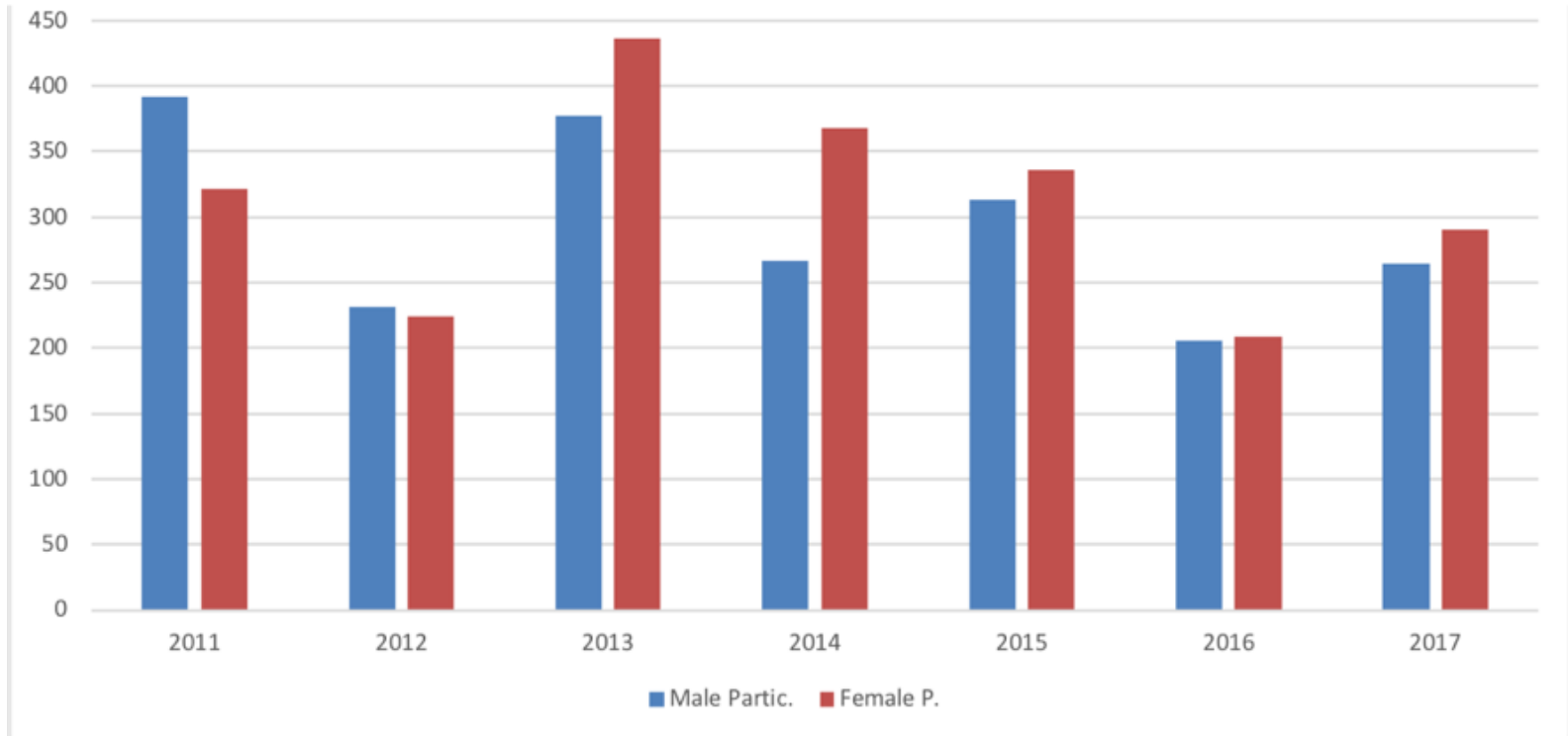
Masterclasses

Fun in a rigorous environment



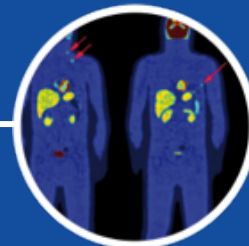
Masterclasses Gender assessment

A 1st trial (participants@IST)



2. CERN PTLTP

CERN's Portuguese Language Teachers Programmes
Escola de Professores no CERN em Língua Portuguesa



10 Years of CERN Teachers Programmes in Portuguese

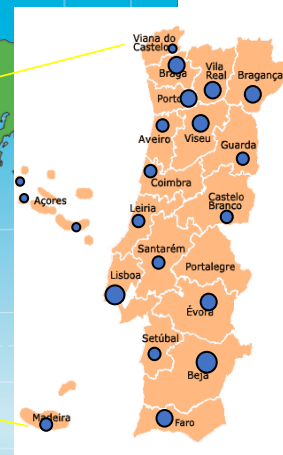
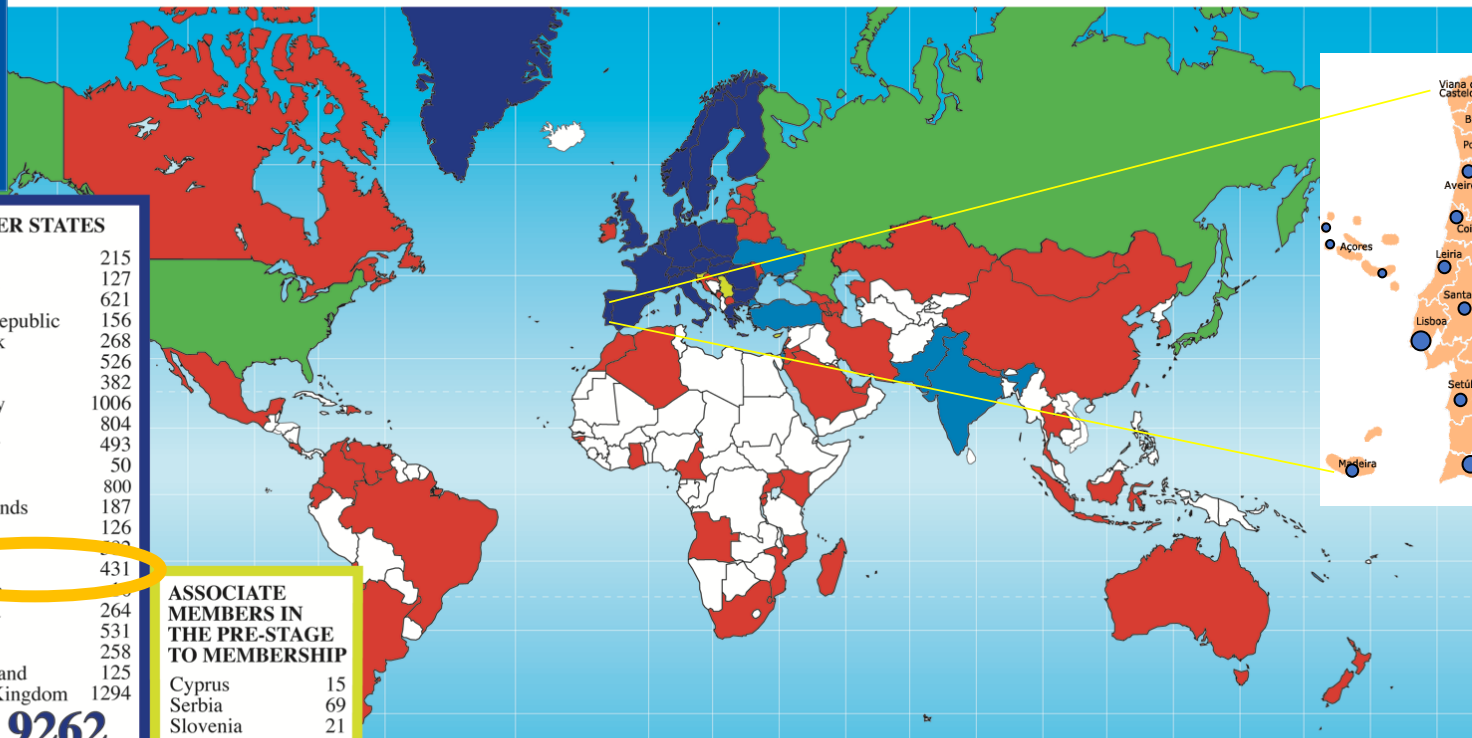
- Teachers spend a week at CERN
- Talks in the morning, visits to Labs+Expts in the afternoon
- 1 afternoon to visit Geneva in groups of ~10 teachers
- 1 "hands-on" workshop to build own cloud-chamber
- International since 2009...
- ...and all in Portuguese Language!



CERN's PTLTP

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Total
Datas	10-14/9	1-5/9	30/8-4/9	5-10/9	4-9/9	26-31/8	1-6/9	24-29/8	30/8-4/9	28/8-2/9	3-8/9	
Pt.Cand.	205	241	191	218	190	250	162	236	187	183	169	2236
Pt. New	205	169	78	130	98	165	57	121	96	63	40	1222
Pt. Part.	43	45	44	45	41	35	34	35	24	22	20	388
Br. Part.		1	11	20	20	30	31	30	22	20	20	205
Mz. Par			5	4	4	4		2	2	1		22
STP Pa				1	1	1	1	1	1	1		7
CV Part.				1	1	1		1	1			5
An. Par.					4							4
TL Part.					1	3	3					7
GB Part					1							1
Total	43	46	60	71	73	74	69	69	50	44	40	639

Teacher Programme Participants 1998 - 2017 (Total: 11414)



MEMBER STATES

Austria	215
Belgium	127
Bulgaria	621
Czech Republic	156
Denmark	268
Finland	526
France	382
Germany	1006
Greece	804
Hungary	493
Israel	50
Italy	800
Netherlands	187
Norway	126
Poland	122
Portugal	431
Romania	100
Slovakia	264
Spain	531
Sweden	258
Switzerland	125
United Kingdom	1294

9262

ASSOCIATE MEMBERS IN THE PRE-STAGE TO MEMBERSHIP

Cyprus	15
Serbia	69
Slovenia	21

105

ASSOCIATE MEMBERS

India	7
Pakistan	4
Turkey	282
Ukraine	155

448

OBSERVERS

Japan	10
Russia	387
USA	108

505

OTHERS

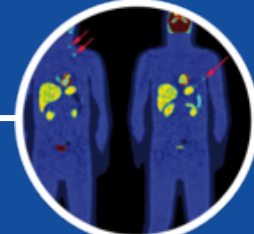
Algeria	1	Cameroon	7	Estonia	80	Lebanon	20	Nepal	3	Taiwan	1
Angola	7	Cape Verde	4	Georgia	138	Lithuania	53	New Zealand	2	Tanzania	1
Argentina	1	Chad	1	Guinea	6	Macedonia	13	Palestine (O.T.)	4	Timor-Leste	9
Armenia	3	China	2	Guinea Bissau	1	Madagascar	2	Qatar	1	Uganda	2
Australia	9	Colombia	2	Iran	9	Malta	37	Rwanda	1	U.A.E.	1
Azerbaijan	2	Costa Rica	4	Ireland	9	Mexico	64	Sao Tome	7	Venezuela	1
Bahrain	2	Croatia	53	Jordan	12	Moldova	4	Saudi Arabia	1		
Belarus	1	Dominican Rep.	72	Kazakhstan	13	Mongolia	1	Singapore	2		
Brazil	209	Ecuador	2	Kenya	4	Montenegro	15	South Africa	8		
Canada	1	Egypt	2	Latvia	49	Morocco	2	South Korea	49		
						Mozambique	22	Swaziland	1		

1094

3.

one night/day activities

European Researchers Nights
Dark Matter session...at the National S&T Week



European Researchers Nights (last Friday of Sept.) 2016 and 2017

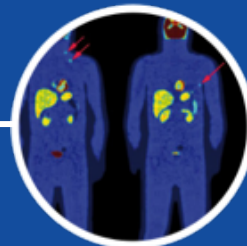
- @Braga, integrated in the celebrations prepared by Escola de Ciências da U.Minho
- @Lisboa, in the Lisbon Planetarium (Virtual Visits to CMS, + “Particle Fever”@2017)

Dark Matter session... celebrated in the national S&T week (Wed., Nov.22nd)

- @LIP-Lisboa, an evening dedicated to Dark Matter research, featuring Ph.D. students
 - **Miguel Orcinha** (Lisboa), **Paulo Braz** (Coimbra), **Tiago Vale** (Braga)
 - DM@AMS (annihilation), DM@LUX (interaction), DM@LHC (production)
 - Full house (more participants than chairs), very positive feedback

4.

Internationalization



IPPOG – International Particle Physics Outreach Group
EPPCN – European Particle Physics Communication Network
HST – High-School Teachers forum (@ CERN)



International Particle Physics Outreach Group

- Turned into a formal Collaboration, with LIP a founding member
- Meets 2x year: Spring outside CERN, Autumn at CERN

Spring 2017 meeting in Lisboa - "at new premises" + **March for Science 22nd April**

EPPCN – European Particle Physics Communication Network

- Meets 2x year: one meeting at CERN, one outside CERN; reports to the CERN Council
- Improves communication of Particle Physics, maximizes exchange of information CERN-Member States

HST – High-School Teachers forum (@CERN)

- New forum started in 2016 at CERN, with a rep./Member State (1 virtual meet., 1 meet.@CERN)
- Focused on education matters, high-school students and teachers, activities for them
- Promotes the **HSSIP** – **H**igh-**S**chool **S**tudents **I**nternship **P**rogramme – for 5 countries in 2017 (PT+...)

5. SPF

Sociedade Portuguesa de Física



NO ENSINO

ESTIMULANDO O ESTUDO

Básico, Secundário, Superior e Pós-graduado

FÍSICA APLICADA
À ENGENHARIA

NA INVESTIGAÇÃO

PREMIANDO OS MAIS JOVENS E
ESTABELECCENDO CONTATOS

*Universidades, Institutos, Centros,
Laboratórios, Empresas,
Unidades de Saúde*

NA SOCIEDADE

DANDO A CONHECER

*Acontecimentos, Sucessos,
Debates, Polémicas, Políticas*

ESTAMOS

• sp física

SOCIEDADE
PORTUGUESA
DE FÍSICA

A **spf** é uma Sociedade Científica criada em Abril de 1974 e é Membro Honorário da Ordem de Instrução Pública.

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Publicamos regularmente uma newsletter

“a inspirar os jovens, a imaginar o futuro, a preservar a memória”

Vantagens para membros

- Ser parte de uma **Comunidade de Físicos**
- Ter acesso à **Gazeta de Física** e à **EuroPhysics News**
- Estar associado às **Sociedades Internacionais: EPS, IUPAP, EFOMP e IOMP**
- Receber **notícias de congressos e eventos**
- Participar nas **Divisões e Grupos**, na promoção e divulgação da Física em Portugal
- Participar no **Fórum de discussão de tópicos de ensino**
- Ter **desconto em congressos, ações de formação, editoras e eventos culturais**

Um Grande desafio

Em 2018 as Olimpíadas Internacionais de Física IPhO vão realizar-se em Lisboa com organização da SPF

Acompanhe !

<http://ipho2018.pt/>

- Vão decorrer de **21 a 29 de Julho** com a participação de cerca de **1000 participantes** (**600 estudantes, 400 professores + observadores e guias**) de **91 países**
- Evento de grande dimensão e importância para Portugal





*Planting
a future*

Thanks!

to all the people collaborating in all these activities!
...and for your attention!

Any questions?

You can find me at abreu@lip.pt



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