

# EPPOG - Autumn Meeting 2007



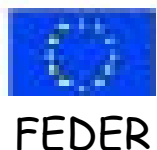
## OUT·REACHing



## in Português

*"Creating CERN Ambassadors in .pt Schools"*

Rolf Landua, Mick Storr, [Pedro Abreu](#), Sofia Andringa, Gaspar Barreira, João Bento, André David, Miguel Fernandes, Joachim Flammer, Ana Henriques Correia, Luís Peralta, Sérgio Ramos, José C. da Silva, Nuno da Silva, and 43 portuguese teachers...



AGÊNCIA NACIONAL  
PARA A CULTURA  
CIENTÍFICA E TECNOLÓGICA

Ciência. Inovação  
2010

Lisboa, Portugal  
2007/10/04



# Reaching CERN with .pt teachers

- ⊞ School of Particle Physics and Cosmology
- ⊞ Mostly in Portuguese language
- ⊞ More teachers allowed to come
- ⊞ One week only => Less need to spend vacation time, and justifiable in formation time
- ⊗ Most speakers coming from Portugal...
- ⊗ Very intense and tough program, few talks not really addressed correctly to this audience





# Tough selection

- ☒ CERN suggested 20 pt teachers in the school
- ☒ applied 200 !
- ☒ after renegotiation (max. bus size), allowed for 43 teachers to take part in the school
- ☒ from all over the country, Madeira & Azores
- ☒ by coincidence, we selected an handicaped teacher that revealed the greatest courage!



# The Group photograph



Some Speakers are surrounded by   
Ministers are surrounded by 



# Talks well balanced

4 Introductory talks, very basic level

1 General detectors, 1 CMS + 1 ATLAS specific talks

1 Portugal@CERN - history, etc...

1 Spin-offs

1 Particle physics w/out accelerators

1 Accelerators

1 Data acquisition systems

1 **final show** (Open Questions -> "El vacio e el nada" -  
perturbing minds by Álvaro De Rújula)

with visits

- all talks video-taped, and accessible in the agenda
- all contents made available
- taught how to visit CERN and to use its resources

# Portugal @CERN

Jan.1986





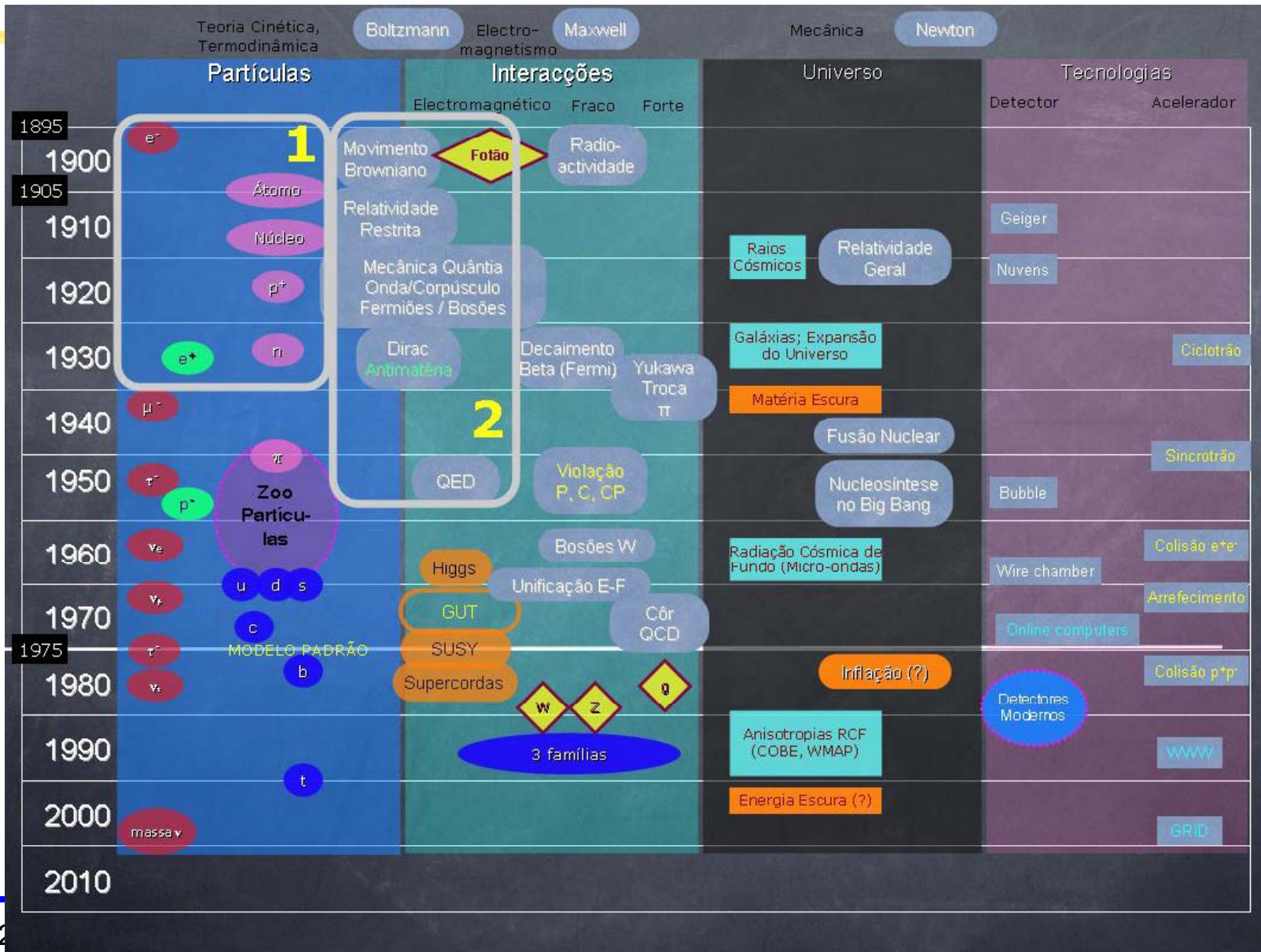
# CERN School of Physics in .pt

Program adapted to our needs

Hours	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday			
09h00	Travel Lisbon Geneva 1st. Group (TAP)	Introduction to CERN	Introduction to Particle Physics (Lesson 2/4)	Introduction to Particle Physics (Lesson 4/4)	Portugal at CERN	Hostel Check-Out			
09h30		Introduction to Particle Physics (Lesson 1/4)	Introduction to Particle Physics (Lesson 3/4)	Particle Physics without Accelerators	Particle Physics Spin-offs	The ATLAS Detector and the Portuguese participation in it			
10h00		COFFEE BREAK				ATLAS	Visit to ATLAS and possibly to the LHC Tunnel		
10h30		Basics of Particle Detection	Questions and Answers Session	Question and Answers Session	Question and Answers Session				
11h00		LUNCH CERN						De Rújula	
11h30		The CMS Detector and the Portuguese participation in it	Practice Session: Visit PS/AD Visit Computer Centre (1h)	Treasure Hunt (visit Geneva)	Guided tour of the Microcosm	Open Questions in Particle Physics and in the Universe			
12h00						Visit to CMS and possibly to the LHC Tunnel	Accelerator Physics		Questionnaires and Evaluation of the Program
12h30	Travel Lisbon Geneva 2nd. Group (EasyJet)	CMS	Cloud Chamber	Treasure Hunt (visit Geneva)	μCOSM	Program END			
13h00						Welcome to CERN	Revision of the Day	Data Acquisition Systems	Out to Lisbon 2nd Group (EasyJet)
13h30									Introduction to the Program and Practicalities
14h00						DINNER CERN	DINNER GENEVA	DINNER CERN	
14h30									DINNER CERN
15h00	DINNER CERN	DINNER GENEVA	DINNER CERN	Out to Lisbon 1st Group (TAP)					
15h30					DINNER CERN	DINNER GENEVA	DINNER CERN	Out to Lisbon 1st Group (TAP)	
16h00	DINNER CERN	DINNER GENEVA	DINNER CERN	Out to Lisbon 1st Group (TAP)					
16h30					DINNER CERN	DINNER GENEVA	DINNER CERN	Out to Lisbon 1st Group (TAP)	
17h00	DINNER CERN	DINNER GENEVA	DINNER CERN	Out to Lisbon 1st Group (TAP)					
17h30					DINNER CERN	DINNER GENEVA	DINNER CERN	Out to Lisbon 1st Group (TAP)	
18h00	DINNER CERN	DINNER GENEVA	DINNER CERN	Out to Lisbon 1st Group (TAP)					
18h30					DINNER CERN	DINNER GENEVA	DINNER CERN	Out to Lisbon 1st Group (TAP)	
19h00	DINNER CERN	DINNER GENEVA	DINNER CERN	Out to Lisbon 1st Group (TAP)					

# A few slides

Plan of the Introductory talks





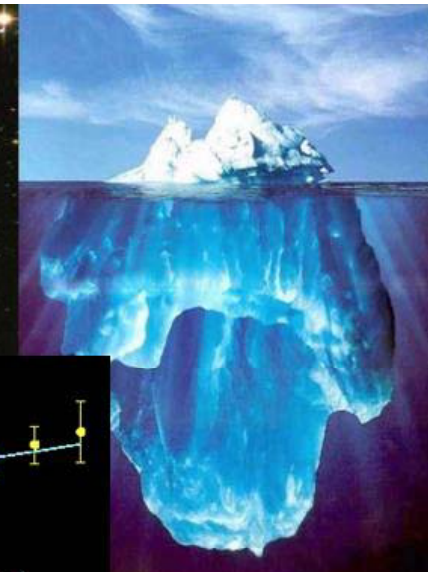
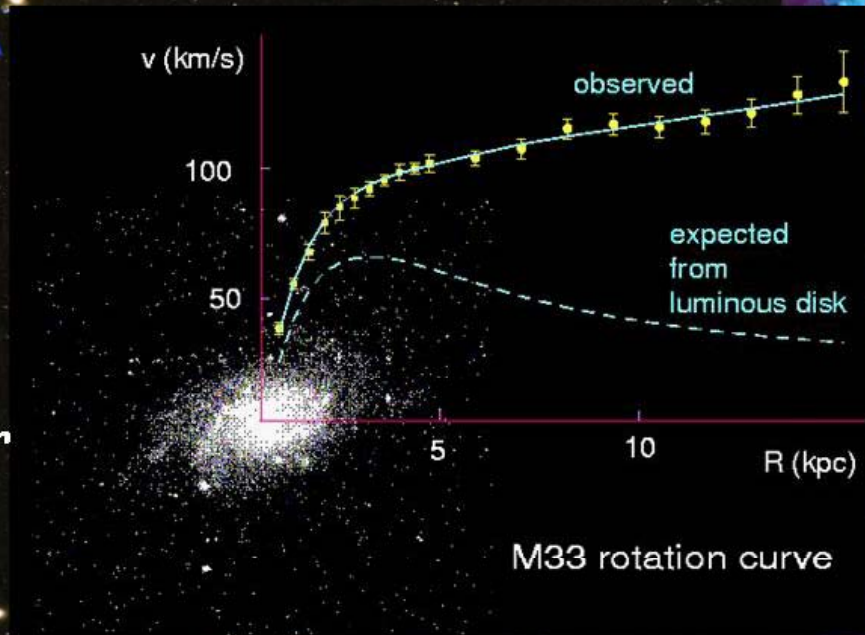


...(dark matter)

# O Mistério da Matéria Escura



Gravidade:  
 $G M(r)/r^2 = v^2/r$   
 Massa interior:  
 $M(r) = v^2 r / G$



©A.De Angelis

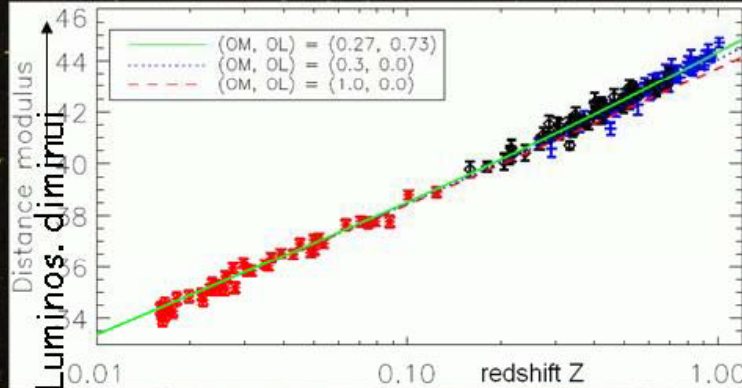
Maior fracção de massa não brilha! O que é?!



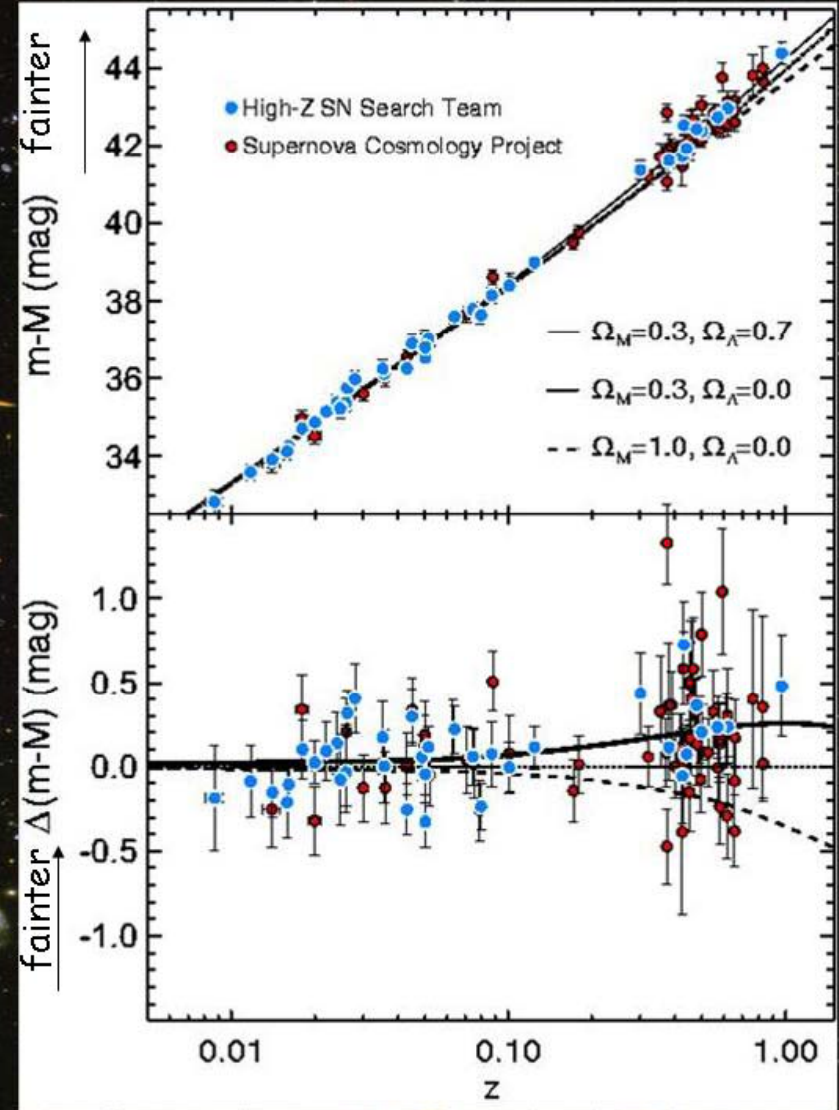
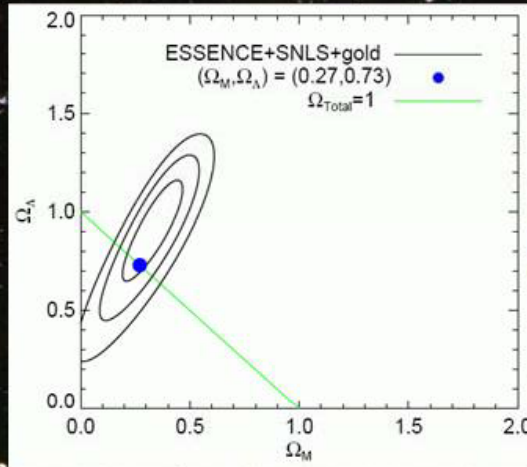
...(dark energy)...

# Evidência para EE!

E mais recentemente:



Densidade Não-Matéria  
vs.  
Densidade Matéria  
s/ efeito

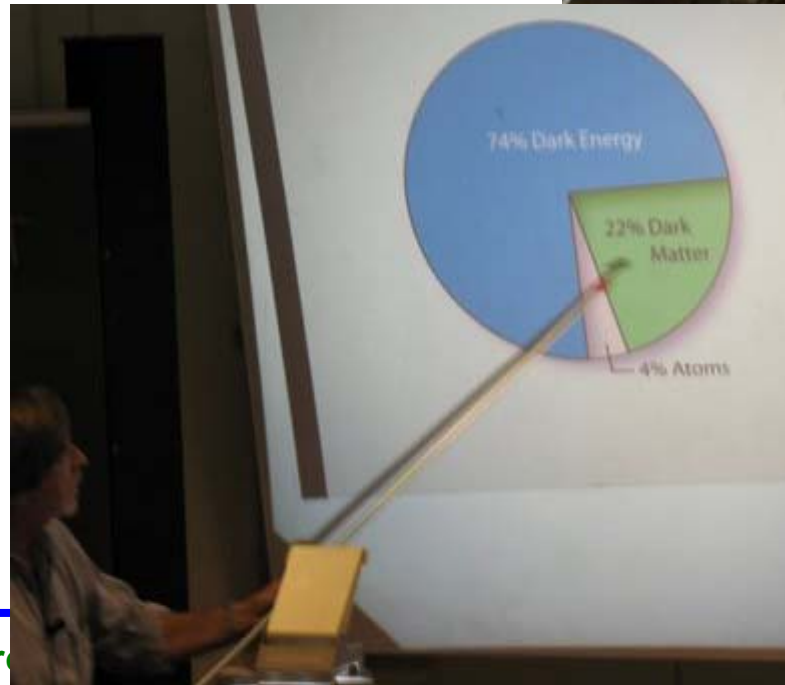
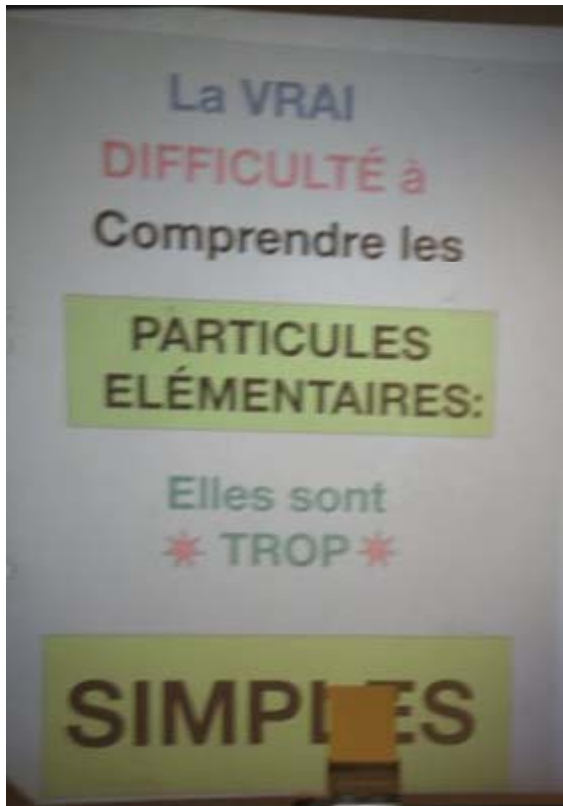
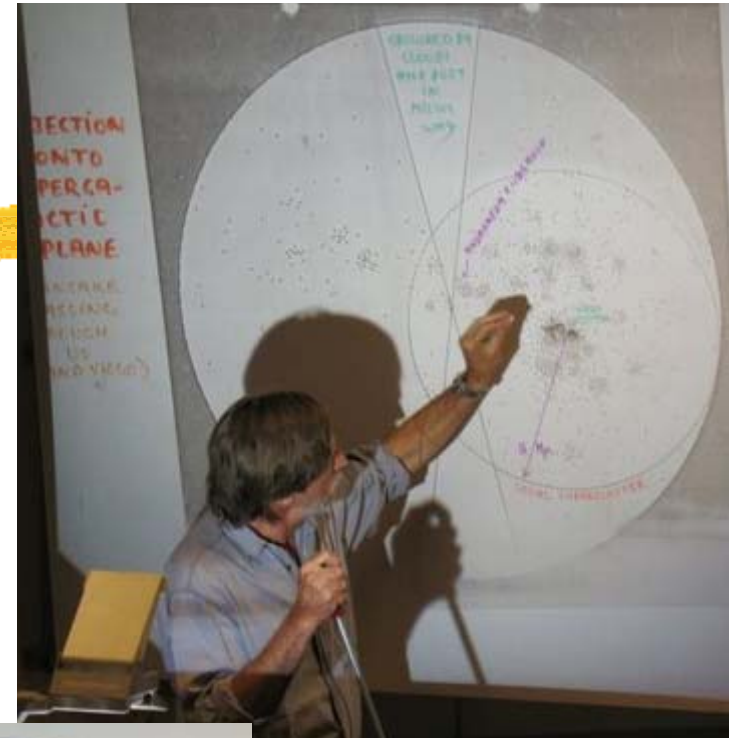




# (open questions)

Universe incomprehensible  
simplicity, structure, contents

Talk by  
Álvaro  
De Rújula





# full of visits!



EPPOG  
LIP

and interaction!



Oct 4<sup>th</sup>, 2007

Pedro Abreu @ EPPOG-Meeting Autumn, CERN, .ch

13/15



# Evaluation (personal view)

The teachers were very **well impressed** by

1. familiarity/accessibility/ *humanity* of the scientists
  2. the **visits!**
  3. most of the **classes**
  4. a Nobel Prize in the cafeteria (Jack Steinberger)
  5. presence/talk with The Minister (of S&T&Univ) and his availability to talk to the teachers
  6. **themselves!** In particular, the overall exceptional qualities of the group (helping, caring, friendliness)
- ∴ "It is an experience one will not forget"*



# (EUROCOSMICS [Saturday@CERN]!)

## v 15 Projects represented

☒ be,cz,de,dk,gr,it,nl,pl,pt,ro,ru,se,sf,sp,uk

## v not represented now, but known to exist:

☒ fr,ca,us(x10) + planned: me

## v Budget mostly to prepare

☒ Database for sharing the data of all projects;

☒ Website for status, informations, a portal;

☒ Meetings and Conferences, Nat'l and Int'l.

## v Proposal very well evaluated by fp7... but?



# CONCLUSIONS

## v School of Physics in home language !

- ⊞ Teachers + quality of talks and human interaction!

- ⊞ Visits! Visits! Visits!

## v (Eurocosmics evaluated very successful (*so far*))

## v What can OUTREACH really offer NEW for HEP ?

- ⊞ Great success with Real Teachers (interaction explodes)!

- ⊞ Immediate Rewarding of communication (eyes flashing!)

- ⊞ Try hard to bring Teachers to CERN!

Nominate them **CERN Ambassadors to the Schools!!!**

➔ + Interaction w/ scientists, + Inter. w/ Human Science!