



# The Europe Egypt Network for Particle Physics

**EENP2**

## **SEVENTH FRAMEWORK PROGRAMME**

**Marie Curie Actions People**

**International Research Staff Exchange Scheme**

**Full Title:** “Europe Egypt Network for Particle Physics”

**Proposal Number:** 318922

**Scientific Panel:** Physics

**Grant Agreement Number:** PIRSES-GA-2012-318922

**Duration of the project:** months 48

**Project start date:** 01-January -2013



# The Europe Egypt Network for Particle Physics

*The partners*

Partner Number	Partner name	Partner short name	Country
1 <i>Beneficiary 1</i>	Politecnico di Bari, Physics Physics Department "M. Merlin"	POLIBA	IT
2 <i>Beneficiary 2</i>	Ecole Polytechnique , Leprince-Ringuet Laboratory (LLR)	ECOLE	FR
3 Partner 3	Helwan University, Physics Department	HELWAN	EG
4 Partner 4	Cairo University, Computer Engineering Dept.	CAIRO	EG
5 Partner 5	Ain Shams University, Physics Department	AINSHAM	EG



# The Europe Egypt Network for Particle Physics

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*The scope*

## **Reinforcement of the Europe-Egypt scientific collaboration**

Long term visits of young and senior Egyptian scientists to perform advanced research on fundamental particle physics in the framework of worldwide large collaborations;

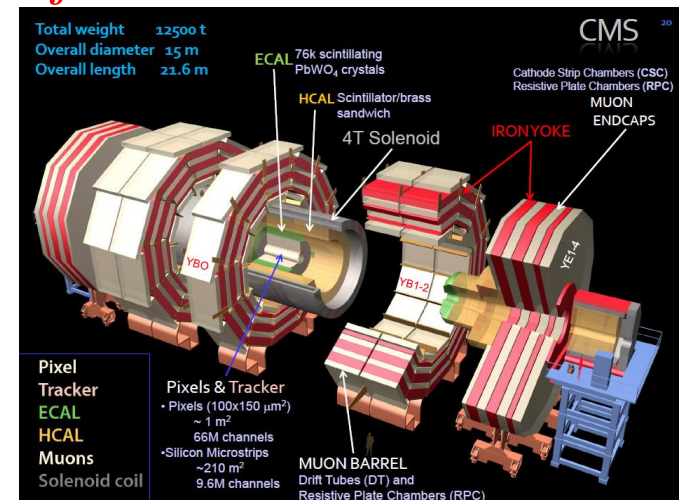
Development of local infrastructures and transfer of knowledge to train expertise and consolidate basic science and related technological applications;

Reinforce the research capability of European Institutions by hosting qualified Egyptian scientists.



# The Europe Egypt Network for Particle Physics

*The EENP2 research program is fully embedded in the LHC-CMS project*



## CMS and EENP2

- Explore the exiting domain of universe basic laws
- World wile collaboration (science with no frontiers)
- Important technological development (GRID, Microelectronics)
- Represent an incredible boost factor for applied science
- Offers opportunities to young scientists for career enhancement



# The Europe Egypt Network for Particle Physics

**WPS**

WP	Title	Beneficiary/ Participant	Start month	End month
1	New particles search	ECOLE POLIBA AINSHAM	4	44
2	Detector development	POLIBA HELWAN	4	44
3	GRID computer application	POLIBA ECOLE CAIRO	4	44
4	Coordination, dissemination and training	HELWAN ECOLE POLIBA CAIRO AINSHAM	1	48



# The Europe Egypt Network for Particle Physics

## Deliverables

### D 1.1: Mass spectrum of ZZ\* decaying into four leptons

Statistical significance of the discovery/exclusion of the Higgs in the mass range 120-160 GeV/c<sup>2</sup> will be obtained. Precise estimation of the backgrounds by simulation and using data is necessary.

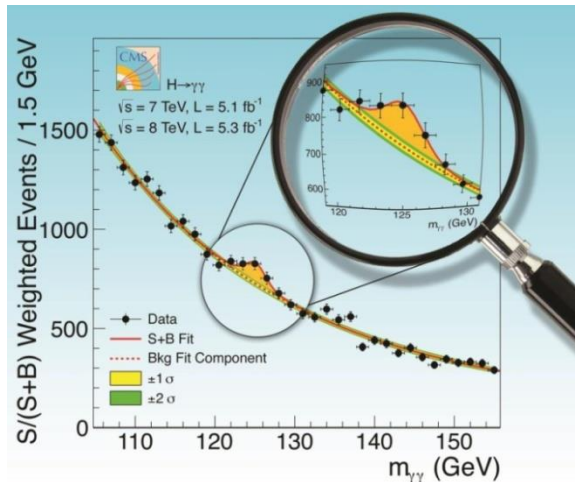
### D 1.2: Mass spectrum of electron pairs at high mass (above the Z)

Statistical significance of the discovery/exclusion of new bosons in the highest reachable mass range will be evaluated. A precise estimation of the background is needed.

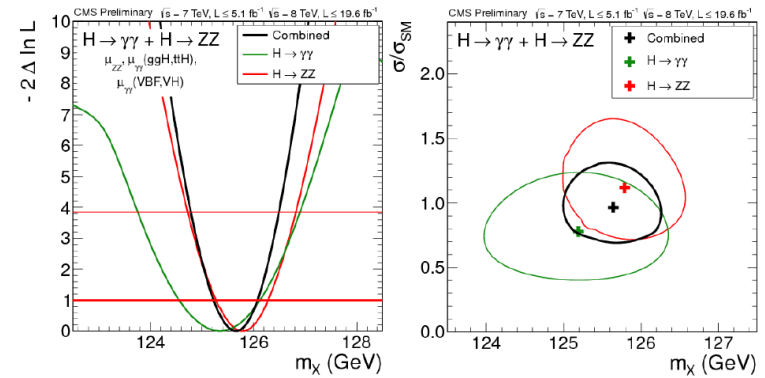
### D 1.3: CMS center for data analysis operational in Egypt

Set the software infrastructures and establish expertises for the running independent advances CMS analysis in Egypt.

Search for new particles



## Higgs Boson Mass from $\gamma\gamma$ and ZZ



$$m_H = 125.7 \pm 0.3 \text{ (stat)} \pm 0.3 \text{ (syst)}$$



# The Europe Egypt Network for Particle Physics

Detector development

## Deliverables

### D 2.1: *Assembly and test of MRPC/GEM detectors*

This deliverable foresees the assembly and beam-test measurements of large size MRPC/GEM prototypes to be proposed for the future detectors upgrade at CERN.

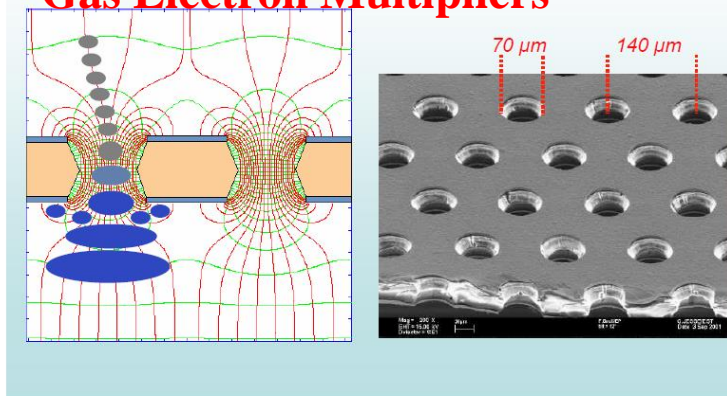
### D 2.2: *Characterization of high radiation tolerant silicon detectors*

This delivery should foresee the passive characterization and the beam-test measurements of new radiation tolerant silicon detector prototypes.

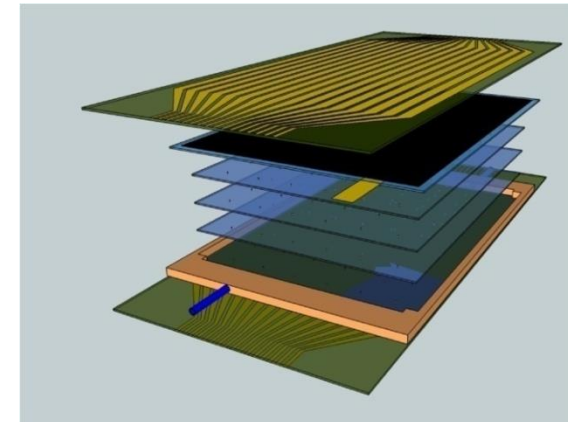
### D 2.3: *Detector laboratory infrastructure at Helwan*

This delivery foresees the completion of a gas-detector laboratory infrastructure in Egypt for the study of gaseous detectors. Also the training of proper personnel for the running of the laboratory will be achieved.

## Gas Electron Multipliers



## Innovative Resistive Plate Chambers





# The Europe Egypt Network for Particle Physics

GRID computer application

## Deliverables

### D 3.1: Transfer advanced GRID concepts and technologies to Egyptian researchers

Train young Egyptian researchers to improve their GRID knowledge and set up basic infrastructure

### D 3.2: Release of a production level GRID job monitoring system and data access system

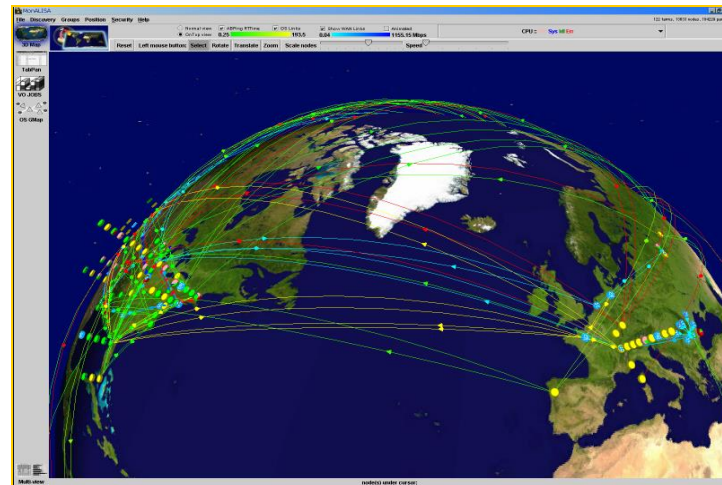
The final version of the monitoring system will be implemented and released. The data management and access system will be finalized and in production.

### D 3.3: Egyptian Sites in production

All the Egyptian sites will have GRID infrastructure ready for the use by CMS end users.

CMS GRID network

370 Sites, 40,000 computers







# The Europe Egypt Network for Particle Physics

Dissemination

## Deliverables

### D 4.1: *Collaboration meetings*

A kick-off meeting, intermediate collaboration meetings and a final concluding conference will be organized.

### D 4.2: *Academic lectures and specialized courses*

Series of academic lectures in Egyptian universities will be scheduled. A school on “High Energy Physics and related technologies” subdivided in three editions along the project period will be organized.

### D 4.3: *Publications and conference reports*

The production and submission to international journal of the results will be finalized, as well as submission to international conferences and preparation of reports.

## ***4th School on High Energy Physics***

**April 2014**

**Ain Shams University & The British University in Egypt (BUE)**

**Organized by**

**The Egyptian Network Of High Energy Physics (ENHEP)**

**Under the auspices of**

*\*The Academy of Scientific Research and Technology (ASRT), Egypt*

*\*Institute National de Physique Nucleaire et de Physique des  
Particules (IN2P3/CNRS), France*

*\*Istituto Nazionale Di Fisica Nucleare (INFN), Italy*

*\*The European Organization for Nuclear Research (CERN), Switzerland*

*\*The FP7- People- IRSES project EENP2*



# The Europe Egypt Network for Particle Physics

## Supervisory Board

POLIBA	Dr. G. Maggi
ECOLE	Dr. P. Minè
HELWAN	<b>Dr. A. Mahrous</b>
CAIRO	Dr. R. Ramadan
AINSHAM	Dr. A. Radi
Ex officio	Dr. G. Iaselli

## Executive Board

Ex officio	Dr. A. Mahrous
Ex officio	Dr. G. Iaselli
Coordinator and Deputy of WPs	

## WP1

<i>Coordinator</i>	N. De Filippis
<i>Deputy</i>	A. Ali Abdelalim

## WP2

<i>Coordinator</i>	G. Pugliese/S. My
<i>Deputy</i>	Dr. Y. Asran

## WP3

<i>Coordinator</i>	I. Semeniouk
<i>Deputy</i>	M. Elshamy

## WP4

<i>Coordinator</i>	E. Salama
<i>Deputy</i>	L. Dobrzynski



# The Europe Egypt Network for Particle Physics

EENP2 in the CERN INDICO data base

<http://indico.cern.ch/categoryDisplay.py?categId=4907>

The screenshot shows the CERN INDICO website interface. At the top, there is a navigation bar with the INDICO logo and the text 'Integrated Digital Conference'. To the right of the logo, there are dropdown menus for 'Europe/Zurich' and 'English', and a 'Login' button. Below the navigation bar, there is a search bar with the text 'Everywhere' and a search icon. The main content area is titled 'EENP2' and includes a 'Parent category' dropdown menu. Below the title, there is a table of events for the 'Egypt Europe Network for Particle Physics (EENP2)' category. The table has three columns: the event name, the number of events, and a right-pointing arrow icon. The events listed are: Executive Board (2 events), Supervisory Board (1 event), WP1 (25 events), WP2 (28 events), WP3 (empty), WP4 (empty), General Meetings (4 events), and Schools (empty). To the right of the table, there is a 'Managers' section with a search icon and the name 'laselli, G.'.

Event Name	Number of Events	Icon
Executive Board	2 events	⇒
Supervisory Board	1 event	⇒
WP1	25 events	⇒
WP2	28 events	⇒
WP3	empty	⇒
WP4	empty	⇒
General Meetings	4 events	⇒
Schools	empty	⇒



# The Europe Egypt Network for Particle Physics

Meetings information and related documentation  
available on line

## WP1

Parent category

WP1

### January 2014

- 22 Jan [WP1 Session during EEPN2 Annual Collaboration Meeting](#) New!
- 07 Jan [EEP2, WP1](#)

### December 2013

- 23 Dec [EEP2, WP1](#)
- 10 Dec [EEP2, WP1](#)

### November 2013

- 26 Nov [EEP2, WP1](#)
- 12 Nov [EEP2, WP1](#)

There are 19 events in the past. [Show them.](#)

### Managers

- Abdelalim, A.
- De Filippis, N.



# The Europe Egypt Network for Particle Physics

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About 30 months of secondments from Egypt to Europe in 2013

WP1	9.5 months	Helwan	17.5
WP2	12 months	Cairo	0
WP3	7 months	Ainsham	5
WP4	0 months	Other	6

Sherif Elgammal	to ECOLE for Z' analysis
Moustafa Eshra	to ECOLE for ECAL performance
Ahmed Ali Abdelamin	to POLIBA for muon upgrade studies
Reham Ali	to POLIBA for Higgs studies
Ahmed Sayed	to POLIBA for simulation studies
Ahmed Ibrahim	to POLIBA for detector studies
Shereen Aly	to POLIBA for detector/simulation studies
Mohamed Elshamy	to ECOLE/POLIBA for GRID training
Ashraf Kasem	to ECOLE/POLIBA for GRID training

**Additional 30 months available for 2014**

**We need to prepare the schedule soon**



# The Europe Egypt Network for Particle Physics

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All the scientist involved in the exchange programme have significantly profit of the stage in Europe

Their work was embedded in large group dynamics and the progress was monitored in frequent working meeting

Some of them were able to join CMS collaboration meetings or integrate in the hardware activity at CERN

They will report the status and the perspective of the work at the meeting today and tomorrow



# The Europe Egypt Network for Particle Physics

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## *Conclusion*

First year of EENP2 was very productive and positive

We need to keep a high threshold on selection of candidates for secondment to maximize scientific production capability and potentiate local feed back

We should integrate EENP2 resources with other available funds to boost the outcome of the project (CMS, local funds, collaboration agreement with other FA and consortium)

Set up of infrastructure also require some local steering for the success