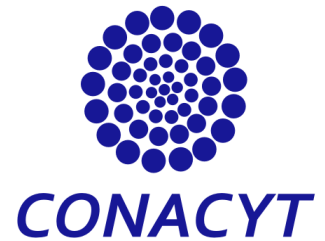


Mexican National Contest for Summer Student Experimental HEP programme

June 6th 2017

Dr. Salvador Carrillo Moreno
Universidad Iberoamericana

President of the National Contest
Division of Particles and Fields
Mexican Physical Society



Consejo Nacional de Ciencia y Tecnología



Historical contributions

OPEN ACCESS

Mexican High Energy Physics Network

J C D'Olive, M Napsuciale and M A Pérez-Angón

[+ View abstract](#)

[View article](#)

[PDF](#)

OPEN ACCESS

Creation of a group on particle accelerator science and technology in Mexico

J. G. Contreras and M. Napsuciale

[+ View abstract](#)

[View article](#)

[PDF](#)

OPEN ACCESS

Emergence and Development of experimental particle physics in Mexico

Salvador Carrillo Moreno

[+ View abstract](#)

[View article](#)

[PDF](#)

OPEN ACCESS

Theoretical-research summer: For a new generation of experts on high energy physics

Saúl Ramos-Sánchez

[+ View abstract](#)

[View article](#)

[PDF](#)

Last year we held our 30th Annual Meeting of the Division of Particles and Fields of the Mexican Physical Society:*

We decided to talk about the history of the Mexican High Energy Physics Network (RED FAE) and in addition to other contributions we presented a brief historical contribution to both experimental and theoretical summer student programme

* <http://iopscience.iop.org/article/10.1088/1742-6596/761/1/011003>

Some History

There is a connection with the spread of elementary particle physics in Europe: in 1983, CERN (European Centre for Nuclear Research) supports the inclusion of Spain as a member state, as it is the case three years later with Portugal. This boosts the development, in both countries, of high energy physics. In parallel, Nobel Prize winner (1988) and second Fermilab (Fermi National Accelerator Laboratory) director (1978 to 1989), Dr. Leon Max Lederman, decides to promote the growth of experimental high energy physics in Latin America.



Leon Lederman

We must appreciate the labour started, more than 30 years ago, by a group of theoreticians and phenomenologists, who fostered scientific stays abroad on experimental high-energy physics. Dr. Matías is concerned with the possible brain drain affecting our most talented students, however, the result of this activity has been –beyond any doubt- beneficial for the development of experimental high-energy physics in Mexico.



Dr. Miguel Ángel
Pérez Angón



Dr. Fernando Matías
Moreno Yntriago

Why sending students abroad to International Labs is important to the Mexican Division of Particles and Fields



This “formula” has prove good results and allow many good relations to grow over the years, helping consolidation in experimental particle physics.

We have a strong participation in HEP collaborations, growing each year and extending to many experiments from all around the world.

We have grown as a community that can now get involved with more students and more resarch programs, we have now many more participation in HEP.

Most of us have participated, in the past, visitng some HEP experiments.

Our main difference with other countries, is that we encourage young student participation in experiments abroad.

First yeas of this programme

1982

Fermilab

Juan Carlos D'Olivo

CINVESTAV

Ph. D.

Theory, ICN-UNAM

José Mustre de León

CINVESTAV

Master Th.

Material Sc., Cinvestav

1984

Fermilab

E715 Antonio Morelos Pineda

CINVESTAV

Master Th.

Professor, IF-UASLP

E715 Gerardo Moreno López

CINVESTAV

Master Th.

Professor, IFUG

E715 Albino Hernández Galeana

CINVESTAV

Master Th

IPN

1986/7

Fermilab

Bruno González

CINVESTAV

Master Th.

Juan Manuel Álvarez Haro

CINVESTAV

Master Th.

Economy, SHCP

Juan José Alvarado Gil

CINVESTAV

Master Th.

Photoacustics, CINVESTAV UM

1988

CERN

Bruno González

CINVESTAV

Ph. D.

***Passed away, CERN accident**

Heriberto Castilla (replacing)

CINVESTAV

Ph. D.

CINVESTAV

Student selection process

I was a participant of this programme back in 1993 as a first year of Master in Science at CINVESTAV

1993				
<u>CERN</u>				
LHC	Salvador Carrillo Moreno	CINVESTAV	Master Th.	Ph. D., FOCUS, CINVESTAV
LHC	-----	UNAM	Intern	*Abandons CERN stay
<u>DESY</u>				
H1	Fabiola Vázquez Valencia	CINVESTAV	Master Th.	Ph. D., FOCUS, CINVESTAV
E791	Rubén Flores Mendieta	CINVESTAV	Master Th.	<u>Fermilab</u>
E791	Alberto Sánchez Hernández	CINVESTAV	Master Th.	Theory, IF-UASLP
				CINVESTAV

I have first hand experience and appreciation of the programme, proccess, etc.

My research experience since graduate programme:

E831-FOCUS (Fermilab) as a Ph. Studet from CINVESTAV

CDF (Fermilab) 2006 as invited research from Florida (while working at current institution)

CMS (CERN) 2006 Universidad Iberoamericana formally joined as an Institution at CERN - LHC

The development of the student selection process

At the beginning, in the initial selection process, it was mostly done by theoreticians and/or phenomenology researchers. This formula has been changed gradually but the selection format was the same back in 2010:

- ✓ The selection process was done in one day meeting (at a Mexican Institution that had a participation in HEP research).
- ✓ One written test
- ✓ English interview (**the interview played the most important part of the selection**)

At the 2011 edition of the annual meeting of the DPyC-SMF and during the gathering of the General Assembly, a group of (mostly very young) experimental physicists proposes to take the reins of the contest and promote its realization outside Mexico City. Drs. Alexis Aguilar Arévalo (ICN-UNAM), Eduard de la Cruz Burelo (CINVESTAV Phys. Dept.), Pedro Podesta (Universidad Autónoma de Sinaloa) and Salvador Carrillo (Universidad Iberoamericana) we make up a first National Committee, which was approved in the General Assembly.

Current Student selection process

Since the intention of the National Committee is to promote the interest and development of the field all over the Country, we decide to carry out the selection process outside Central Mexico: one year outside and one year in the vicinity of Mexico city. The process takes place now with:

- 1) a **web pre-selection step**: Students sent their curriculum, their grades from their university, a letter of recommendation and a personal letter with their intention and motivation to participate in this contest. The responsible hosting the contest with the national committee selects the best students from this process to participate in the next step. From here we select around 30 students.
- 2) A **full 2 day mini workshop** with the following format:
 - a) General Introduction Talk to HEP and statistics (Dr. Eduard de la Cruz)
 - b) Parallel experimental sessions: “hands-on” experiment. We divide the students into 3 groups (10-11 students) we put them to work on a particular experiment: Cosmic Ray, DAQ measurements, etc. Students rotate from one session to the other in order to attend all Lab experiments. (Dr. Arturo Fdz, Dra. Fabiola, etc)
 - c) Computer skills examination/introduction ROOT, C++, GEANT, etc. (Dr. Alexis A., Dr. Pedro P., Dr. Eleazar, etc.)
- 3) A **1½ day Interview**: English 10-15 minutes interview for the final qualification of the students.

Preselection web
base process

Pre-Selection process: Starts around 2 months in advance of the Hosting Institution/University for the National Contest/Workshop.

OFFICIAL WEB PAGE: <https://sites.google.com/site/concursoveranosextranjero/>



Veranos
Científicos Extranjero



@VeranosCientif

National Contest

2 Full day workshop

+

Half day English interview

A Jury is formed for the interview process. Taking into account the student preference and student profile we decide to which institution the student should go

3 day selection process:

* 2 FULL DAY workshop with the following:

3 Lab. Sessions (Students split in 3 Groups)

2 Computer Sessions (ROOT, C++, GEANT, etc.) Linux base

1 Introductory to Statistics and HEP Session

At the end of all sessions we have an examination

After the 2 days each responsible of a session will personally grade each student. We add all the gradings in order to compute a General Mark that is used during the morning of the 3rd day to decide which students and how many students we are going to interview in English.

* 1/2 DAY ENGLISH INTERVIEW. We do a 10-15 minutes interview, to see the student English communication ability.

Some remarks

- ✓ We allow students to participate several times. They will not apply more than two times. As a very general rule we do not see an advantage on students that had applied before.
- ✓ We allow students to participate in the experimental and theoretical contest. The opposite is not allow for the theoretical committee.
- Simply we think that many students do not have full access to laboratories during Bachelor.
- ✧ The theoretical contest had just started few years ago. The responsible is Dr. Saúl Ramos. He participated in one selection contest with us as a Jury to follow the process, while starting the first theoretical national contest (see next page)

Theoretical-Research Summer on High Energy Physics

◀ Home

Call for applications (PDF)

Poster

Contact

Organizers



The Physics Institute of UNAM, the Division of Particles and Fields of the Mexican Physics Society (SMF) and the Network of High Energy Physics of the CONACyT invite **last-year B.Sc. (Physics)** and **first-year M.Sc. (Physics)** students to apply for a full fellowship to carry out a two-month stay during the **summer 2017** in the theory groups of **ICTP** or **JLab** doing research on **theoretical physics**.

Basic Requirements: Knowledge on High Energy Physics and high performance on English.
More details in the **call for applications**.



2017 Estancias de Verano Teóricas

ϕ -sica de altas energías

¿Te interesa la física teórica de altas energías y estudias el último año de licenciatura o el primero de maestría?

Compíte para hacer una estancia de investigación de dos meses durante el verano del 2017 en el ICTP o en el JLab con todos los gastos cubiertos.

Bases e inscripción:
<http://cuerdas.fisica.unam.mx/veranosteoricos/>

Fecha límite de recepción de solicitudes:
31 de octubre de 2016

Comité Nacional

A. Aranda
A. Bashir
L. Díaz-Cruz
J. Eriq
O. Loaiza-Brito
A. Mondragón
M. Mondragón

G. Murguía
L. Patiño
A. Pérez-Lorenzana
A. Raya
S. Ramos-Sánchez
C. Schubert
G. Toledo

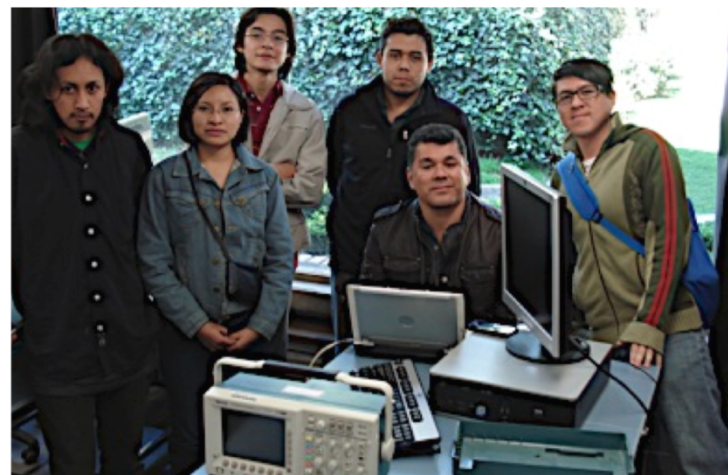
Comité Local

M. Chemicoff
J. Eriq
M. Mondragón
G. Murguía
S. Ramos-Sánchez
G. Toledo

Invitan el Instituto de Física de la UNAM, la División de Partículas y Campos (DPyC) de la Sociedad Mexicana de Física y la red de Física de Altas Energías (FAE) del CONACyT

Informes
ramos@fisica.unam.mx





Places where we have hosted the National Contest

Since the new format of the contest (with mini-workshop) we have decided to extend the contest outside central Mexico

MEXICAN STATES:

- ① 2009 BUAP Puebla
- ② **2010 UNAM – Nuclear Science**
- ③ 2011 UAS Sinaloa
- ④ **2012 Universidad Iberoamericana**
- ⑤ 2013 UDG Guadalajara
- ⑥ 2014 UG Guanajuato
- ⑦ 2015 UNACH & MCTP Chiapas
- ⑧ 2016 UAEH Hidalgo
- ⑨ **2017 Mexico city**



From where are the students coming from

2017

- 1) Chihuahua
- 2) Ciudad de México
- 3) Guanajuato
- 4) Hidalgo
- 5) Jalisco
- 6) Puebla
- 7) Michoacán
- 8) Nuevo León
- 9) Sinaloa
- 10) Yucatán
- 11) Zacatecas

We do not have students always
from the same States



2016 Students at Hidalgo State in Mexico



Students coming to DESY

- ❑ We have a long establish relation with DESY.
- ❑ We do not have a “wall” in between, we do have a strong bridge with DESY.
- ❑ Our selection process is getting better.
- ❑ We are also including accelerator physics in the summer programme.



Ganadoras y ganador Last year

- * **CERN** Edna Loredana Ruiz V. (UNAM)
- * **FERMILAB** María Martínez C (Tec. Monterrey)
- * **DESY** Tania Martínez C (BUAP)
- * **DESY** Laila Vleeschower (UNACH)
- * **JLab** Adriana Ivonne Canales R (UNAM)
- * **SNO-Lab** José Guillermo Lara (UNAM)

Ganadores This year

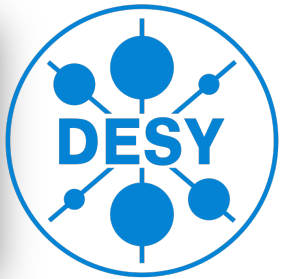
- * **CERN** Aurora Cecilia Araujo M. (U de GTO)
- * **FERMILAB** Karla María Tame N (BUAP)
- * **DESY** Omar Mancilla M (UAEH)
- * **DESY** Vladimir Ruiz R (UNAM)
- * **JLab** Anahí Segovia M. (UAZ)
- * **SNO-Lab** Héctor Hawley (UA Cd. Juárez)

Some statistics and efficiency of our programme with DESY

We do not hold the full history of the contest. We were able to recover most part of it.

- Up to 2004 60% of the students proceed to to a graduate programme, in physics or related topics.
- Up to 2004 20% were women.
- ✧ Before 1996 90% of the attendance were graduate students
- ✧ We have in a way moved in the other direction: 90% are undergraduate students
- ✧ We now have a strong evidence that close to 80% of the students proceed to a graduate programme
- ✧ Women participation has increase around 30%

1993	Fabiola Vázquez Valencia
1994	Javier Espinoza
1995	Oscar Ramírez
1996	Miguel Mondragón
	Horacio Cantú Quirino
1997	Gabriela Murguía
	Miguel Francisco Villoro
1998	Andrea Vargas
	Erika Yvonne Carrasco
1999	Manuel Cristo Yee
	Jimmy Hernández
	J.L. Gamboa
2000	Beatriz Arellano
	Eric Martínez
	Eric Vázquez Jaureguí
	Jorge Antonio Féix Hdz
2012	Omar Fernando Sosa
	Gabriel Ramírez
2013	J. Alejandro González
	Juan Manuel Grados
2014	Juan L. Cuspinera
	Arturo A. Santaella
2015	Pamela Patricia Ornelas
	Saulo Hernández
2016	Tania Martínez
	Laila Vleeschower
2017	Omar Mancilla M
	Vladimir Ruiz R



Summary

- We are very receptive to improve our methodology for selecting students. We are open to suggestions
- Our actual selection is reaching a margin of no more than 30 students during our annual contest in the current format. If needed we may need to extend for a $\frac{1}{2}$ day more.
- Our relation with DESY has been very rewarding and for a very long time.
- We are looking forward to consolidate or extend our participation with the Lab.

BACKUP

Some History

There is a connection with the spread of elementary particle physics in Europe: in 1983, CERN (European Centre for Nuclear Research) supports the inclusion of Spain as a member state, as it is the case three years later with Portugal. This boosts the development, in both countries, of high energy physics. In parallel, Nobel Prize winner (1988) and second Fermilab (Fermi National Accelerator Laboratory) director (1978 to 1989), Dr. Leon Max Lederman, decides to promote the growth of experimental high energy physics in Latin America.



“As a result of these gatherings, some colleagues from UNAM and CINVESTAV got interested in driving the training of young Mexican researchers in this area. From IF-UNAM, Jorge Flores, Clicerio Avilés and Matías Moreno decided to start this process with the ‘conversion’ of active physicists working on high-energy physics (FAE) theoretical and phenomenological research in experimental physicists. Clicerio Avilés himself managed to succeed on this goal through long stays at Fermilab and, on his return to Mexico, created the Institute of Physics of Guanajuato University



From CINVESTAV, Augusto García, Arnulfo Zepeda and Miguel Ángel Pérez decided to take a different strategy and got several CINVESTAV students excited with the idea of perfecting his doctoral training in experimental high energy physics via thesis advised by Fermilab, CERN and DESY (Deutsches Elektronen Synchrotron, near Hamburg, in Germany) researchers [1]. This strategy was also chosen by some Brazilian colleagues, as Joao dos Anjos and Alberto Santoro.”(Miguel Ángel Pérez, 2016).

Journal of Physics: Conference Series

PAPER • OPEN ACCESS

Emergence and Development of experimental particle physics in Mexico

Salvador Carrillo Moreno

Published under licence by IOP Publishing Ltd

Journal of Physics: Conference Series, Volume 761, Number 1



Article PDF

References ▾

<http://iopscience.iop.org/article/10.1088/1742-6596/761/1/012003>

+ Article information

Abstract

Thanks to two interviews to Drs. Miguel Ángel Pérez Angón and Matías Moreno (Sep/2016), I can present to you how the idea of forming researchers in experimental particle physics in Mexico started.

Mexican National Network on HEP

First Meeting *March/2009*
National Network on HEP

Since then many efforts has been converge to consolidate mexican participation in experimental and theoretical HEP.

Every two years, at most, we meet again to construct a common interest in develop a stronger network programme.

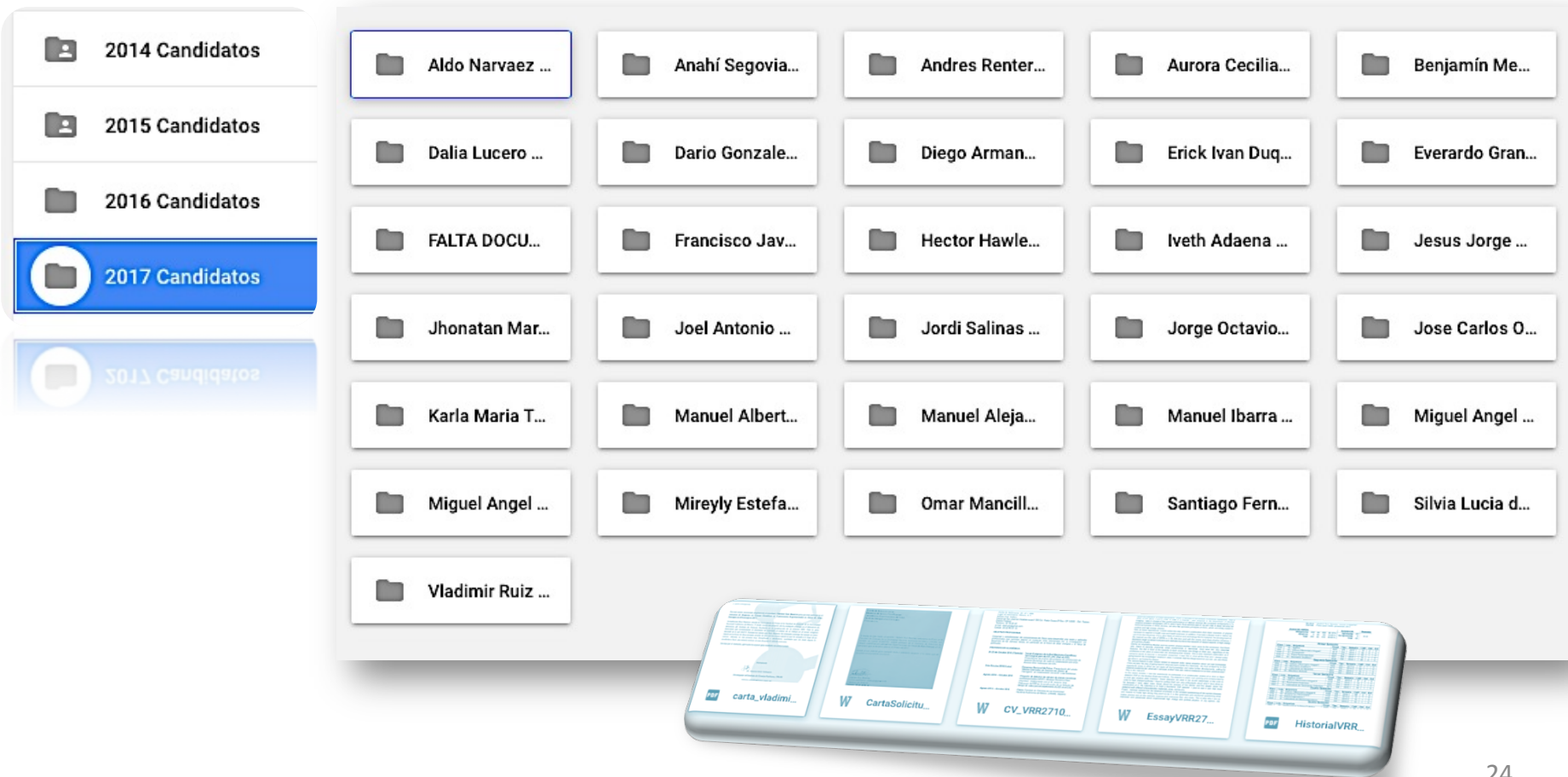


FÍSICA DE ALTAS ENERGÍAS
congreso nacional

4-7 MARZO
2009
TAXCO, GUERRERO

JUAN CARLOS D'OLIVO, ICN-UNAM

Yearly Google Drive student information



2017 Students

Nombre	Apellidos	Universidad/Facultad	Lic / Maestría	Semestre
Ordenar ▾	Ordenar ▾	Ordenar ▾	Ordenar ▾	Ordenar ▾
Silvia Lucía de Gpe	Arellano R.	BUAP	Lic.	7
Miguel Angel	López C.	IPN	Lic.	10
Joel Antonio	Flores Ch.	ITESM	Lic.	8
Erick Iván	Duque G.	ITESM	Lic.	9
Santiago	Fernández del Valle P.	ITESM	Lic.	7
Héctor	Hawley H.	UA Cd Juárez	Lic.	9
Omar	Mancilla M.	UAEH	Lic.	5
José Carlos	Olvera M.	UAEH	Lic.	5
Jesús Jorge	Gámez L.	UAS	Lic.	7
Andrés	Rentería O.	UAS	Maestría	1
Benjamín	Medina C.	UAY	Lic.	9
Mirely Estefanía	Pérez H.	UAY	Lic.	10
Jhonatan Marcell	Tzuc P.	UAY	Lic.	Pasante
Anahí	Segovia M.	UAZ	Maestría	1
Jorge Octavio	Vizcaíno G	U de G	Lic	Pasante
Everardo	Granados V.	U Gto	Lic.	9
Diego Armando	Andrade A.	U Gto	Maestría	1
Francisco Javier	Rosas T.	U Gto	Lic.	9
Miguel Angel	Hernández M.	U Gto	Lic.	Pasante
Aurora Cecilia	Araujo M.	U Gto	Lic	9
Iveth Adaena	Gaspar G.	U Mich. SNH	Lic.	9
Vladimir	Ruiz R.	UNAM	Lic.	7
Jordi	Salinas S.M.	UNAM	Lic.	9
Dalia Lucero	Ramírez G.	UNAM	Lic.	Pasante

Example of detail program schedule

CONCURSO VERANOS CIENTIFICOS EXTRANJERO EXPERIMENTAL 2017

Programa Propuesto (Versión - 2)

Jueves 17 de Noviembre de 2016

7:30 - 8:30	Desayuno		HOTEL
8:30 - 9:00	Traslado caminando a Universidad		Caminando
	REGISTRO ENTREGA BOLETO TERRESTRE		
9:00 - 9:30	Inauguración		
10:00 - 11:30	Sesión Dr. Eduard de la Cruz		Auditorio Edificio B (PB)
11:30 - 2:30			
	Dr Arturo F. / Eduardo M.	Dr Salvador	Física Aceleradores
	Edificio XXX	Edificio XXX	Edificio XXX
	Aula: Grupo A	Aula: Grupo B	Aula: Grupo C
2:30 - 4:00	COMIDA	COMIDA	COMIDA
4:00 - 7:00	Sesiones experimentales (2)		
	Dr Arturo F. / Eduardo M.	Dr Salvador	Física Aceleradores
	Edificio XXX	Edificio XXX	Edificio XXX
	Aula: Grupo B	Aula: Grupo C	Aula: Grupo A
07:15	Regreso Hotel		Autobús

Viernes 18 de Noviembre de 2016

7:30 - 8:30	Desayuno		HOTEL
8:30 - 9:00	Traslado caminando a Universidad		
9:00 - 11:30	Sesiones experimentales (3)		
	Dr Arturo F. / Eduardo M.	Dr Salvador	Física Aceleradores
	Edificio XXX	Edificio XXX	Edificio XXX
	Aula: Grupo C	Aula: Grupo A	Aula: Grupo B
11:30 - 1:00	Por determinan		Sala de Cómputo
1:00 - 2:30	Dr. Alexis Aguilar Problemas en FAE con ROOT		Sala de cómputo
2:30 - 4:00	COMIDA	COMIDA	COMIDA
4:00 - 5:30	Dr. Pedro Podesta Introducción Geant 4		Sala de cómputo
5:30 - 7:00	Dr. Eleazar Cuahutle MonteCarlo y Generadores		Sala de cómputo
07:15	Regreso al Hotel		Caminando

Sábado 19 de Noviembre de 2016

7:30 - 8:30	Desayuno		HOTEL
8:30 - 9:00	Traslado caminando a Universidad		
9:00 -	Entrevistas		Auditorio Sala (entrevistas)
02:00	Clausura/Entrega Diplomas		Auditorio