



# 7th International Conference on New Frontiers in Physics (ICNFP2018)

4-12 July 2018, OAC Kolymbari, Crete

<https://indico.cern.ch/event/icnfp2018/>

## Welcome !



**ICNFP 2018 : 315 oral presentations and 23 poster presentations**

**279 Participants**



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## Organizing Committee

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**Sergei Mironov** (Institute for Nuclear Research of RAS, Moscow, Russia) (**Scientific Secretary**)

**Rishi K. Mishra** (Indian Institute of Science, Bangalore, India)

















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MATERIALS can be found here:

<https://indico.cern.ch/event/663474/overview>

-  chatzifotiadou\_poster\_printer.pdf
-  Concert\_poster\_05-07-2018\_print.pdf
-  Concert\_poster\_all\_print.pdf
-  Concert\_programm\_05-07-2018.pdf
-  Concert\_programm\_09-07-2018.pdf
-  de Roeck\_poster\_printer.pdf
-  Every\_day\_Bus\_Stops.pdf
-  ICNFP\_Poster\_18\_A3\_press.pdf
-  ICNFP\_Poster\_18\_A3\_print.pdf
-  ICNFP\_Poster\_18\_A4\_press.pdf
-  ICNFP\_Poster\_18\_A4\_print.pdf
-  ICNFP\_Poster\_18\_A4\_web.pdf
-  Opera Gala OAC 2018.pdf
-  Preliminary Programme.pdf



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The program can be found in the main conference webpage under the item "Program" or "Materials" and in the "Timetable" :

<https://indico.cern.ch/event/663474/timetable/?layout=room#20180704.detailed>

**Please upload your presentation file in the timetable well before your talk**  
**Please upload (also) a pdf version of your presentation in the timetable**

**The poster session will be the 9th july at 19h30-20h30.**  
**Please bring a bottle of wine or other drink for the poster session.**  
**Please make sure to have your poster in place in advance.**





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## *Registration*

*will take place practically every day starting  
the 4<sup>th</sup> July at 10h30-13h30*

*On 4<sup>th</sup> July it will also be at 15h-17h*



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## Scientific program:

7 lectures (4th july )

~50 plenary talks (5-12th july)

~200 talks at sessions and Workshops (5th-12th july)

23 posters (9th july)

## Some of the events:

### 5 Excursions

-6<sup>th</sup> July 16:00-24:00, Chania,

-7<sup>th</sup> July 19:30-20:30, Gonia Monastery,

-8<sup>th</sup> July 6:00-19:00 Knossos;

-8<sup>th</sup> July 6:00-17:00 Monasteries

-8<sup>th</sup> July 8:30-15:00 Monasteries

-8<sup>th</sup> July 10:00-18:00 Falasserna

2+1 Classical Music Concerts (5<sup>th</sup> July 21:20-22:30, 7<sup>th</sup> July 11:00-11:30,  
9<sup>th</sup> July 21:20-22:30)

1 Opera gala (10<sup>th</sup> July, 21:30-22:30)

1 Public talk in Greek in Chania with music (6<sup>th</sup> July 19:30-21:00)

1 Public talk in English (10<sup>th</sup> July, 19:00-20:00)

1 After dinner talk (4<sup>th</sup> July, 20:30-21:30)

1 Round Table (11<sup>th</sup> July 18:30-20:00)



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1. **Wednesday 4 July 2018, 19:00-20:00 Blessing** in the OAC Chapel. Introduction to the **History of OAC Chapel and Meaning of Blessing** by **Katerina Karkala** (OAC) given inside the OAC Chapel (old building), followed by a ceremony of **Blessing** in the OAC Chapel for interested people.
2. **Wednesday 4 July 2018, 20:30-21:15 After dinner talk** in the open veranda of OAC on "**History of Crete**" by **Emanuela Larentzakis** with a particular focus on the **History of Chania**. This talk is preparation for the excursion to Chania the 6 July.
3. **Thursday 5 July 2018, 21h20-22h30 Welcome Concert** by **Ruben Muradyan (piano), Svetlana Nor (Violin) and Vladimir Nor (Cello)** (Formal dressing is suggested).
4. **Friday 6 July 2018, 16:00-23:30 Excursion to Chania**, old Venetian Harbor. Starting from the **Old Agora**, one can visit the **magnificent Cathedral** of Chania (a three aisle basilica from **1860**), the archeological **Museum** of Chania, the old **Venetian Port** with its old turkish **Mosque Yali Tzami (17th century)**, the **Castle of Chania**, the Egyptian-Venitian **Lighthouse** (from **16th** century) and more.
5. **Friday 6 July 2018, 19:30-21:00 Concert of classical music** by **Svetlana Nor (violin), Vladimir Nor (cello)**, and **Public Talk** by Dr. Despina Hatzifotiadou, "**Mapping the secrets of the Universe with the Large Hadron Collider at CERN**" (in greek) in **Sailing Club in Chania**, old harbor.
6. **Friday 6 July 2018,,** For interested people **Historical Talk** by the archeologist Alex Ariotti on the History of jews in Greece at 18h00 (in english) (TBC) in the restored **Etz Hayyim Synagogue** of Chania (**15th** century) and visit of the Synagogue and its Exhibition.





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9. **Sunday 8 July 2018 Conference Excursions:** One excursion will visit the **Palace of Knossos**, center of the Minoan civilization (3650-1450 BCE), considered Europe's oldest city, where the legendary **King Minos** has reigned, with the Labyrinth of Minotaurus in which human sacrifices were made. **His mother Europi (Ευρώπη)** brought to Crete by Zeus, **gave her name to the continent of Europe**. The excursion will visit also the **Museum** of Herakleion, one of the richest Musea in Greece. Other excursions will visit famous historical **Monasteries** in the mountains of Crete, including the celebrated **Holy Monastery of Chrysopigi (16th century)** with its rare **Exhibition** of old paintings, or the **Falassarna** beach, one of the most famous and purest beaches of Crete.
10. **Monday 9 July 2018, 19:30-20:30 Poster session** and **Best Poster Award** ceremony in the lower veranda of OAC, with wine testing and dinner at **20:30-21:30**.
11. **Monday 9 July 2018, Concert of Classical Music in OAC at 21:30-22:30, by Ruben Muradyan (piano), Svetlana Nor (violin), Vladimir Nor (cello)**. (Formal dressing is suggested).
12. **Tuesday 10 July 2018 21:30-22:30, Opera Gala**, OAC amphitheater. Artists: **Kalliopi Petrou, Soprano, Alessia Tofanin, piano**. (Formal dressing is suggested). The program can be found under materials at the home webpage.
13. **Tuesday 10 July 2018, 18:45-19:45**, OAC amphitheater, **Public Talk by Albert de Roeck, in english**.
14. **Wednesday 11 July 2018, 20:00-23:30 Conference Dinner** with **live Cretan Music and Dance in OAC**.





# ICNFP 2018

International Conference on New Frontiers in Physics  
OAC, Kolymbari, Crete, 4-12.06.2018

**Ruben Muradyan**  
(piano)

**Svetlana Nor** (violin)

**Vladimir Nor** (cello)

## *Welcome Concert*

**5 July 2018, 21h20**

Brahms  
Debussy  
Schubert



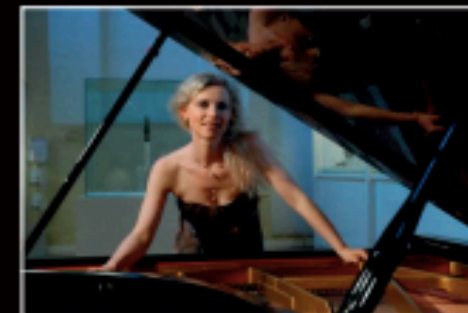
## *Classical Music Concert*

**9 July 2018, 21h20**

Rachmaninov  
Tchaikovsky  
Glazunov  
Vieuxtemps

**Kalliopi Petrou**  
(soprano)

**Alessia Toffanin**  
(piano)



## *Opera Gala*

**10 July 2018, 21h00**

Moore  
Bellini  
Debussy  
Verdi  
Rossini  
Gershwin  
Menotti





**10 July 2018, 18:45-19:45**

OAC amphitheater

## Public Talk by **Dr. Albert de Roeck**



Neutrinos are enigmatic elementary particles, which have fascinated us for many decades. Neutrinos are all around us, coming from the sun and outer space, from interactions of cosmic rays in the atmosphere, from radioactive decays in the earth and from nuclear reactors, to name a few examples. Trillions of neutrinos pass through you every second during your whole life!

The Neutrino was first proposed by Wolfgang Pauli to explain mysterious results in radioactive decays. He realised that perhaps this particle, if it really existed, would probably never be detected because it interacts so weakly with atomic matter. It took indeed 26 years before it was experimentally observed. Since then the neutrino particle has been an intense source of surprises. It was found that neutrinos come in different flavours and we know presently of three kinds of neutrinos. Moreover in 1998 it was shown that neutrinos can 'change their flavour' in flight i.e. when they travel over long distances. This also led us to understand that neutrinos must have a tiny mass, like most other elementary particles we know of. However, our best theory to understand elementary particles and their interactions did not expect that.

There are presently many open questions in neutrino physics. What generates the tiny masses of the known neutrinos and what is the mass pattern? Are there more

Professor Dr. Albert De Roeck is a senior research scientist and staff member at CERN and a professor at the University of Antwerp, Belgium. He obtained his Ph.D. at the University of Antwerp and then spent ten years at the German particle physics laboratory, DESY, where he and his team made very precise measurements of the quark and gluon structure of the proton, and performed precise tests of the strong force. To pursue his interest in discovering new physics at particle colliders, in particular supersymmetry and extra dimensions, he returned to CERN. During the last ten years, he has played a significant role in the preparation of one of the experiments at the LHC: the Compact Muon Solenoid (CMS). De Roeck is one of the leaders in the CMS physics program and was the deputy spokesperson of the experiment in 2010 and 2011. He is presently the convener of the Higgs search physics group.

## The Status of our Understanding of Neutrinos and Future Prospects





**6 Ιουλίου/July 2018, 19:30-21:00**

Ιστιοπλοϊκός Όμιλος Χανίων, Νεώριο Μόρο

Chania Sailing Club, Old Harbour



**Δρ. Δέσποινα Χατζηφωτιάδου**

πείραμα ALICE, CERN και INFN Μπολόνια, Ιταλία

**Dr. Despina Hatzifotiadou**

ALICE experiment, CERN, and INFN Bologna, Italy

Από τι είναι φτιαγμένος ο κόσμος που μας περιβάλλει; Ποια είναι τα στοιχειώδη συστατικά της ύλης και ποιοι οι θεμελιώδεις νόμοι που διέπουν τη λειτουργία του Σύμπαντος; Τις απαντήσεις σε αυτά τα ερωτήματα αναζητούμε με τον μεγάλο επιταχυντή αδρονίων (LHC) στο CERN, το Ευρωπαϊκό εργαστήριο φυσικής στοιχειωδών σωματιδίων. Θα συζητηθούν οι βασικές μας γνώσεις για τα στοιχειώδη σωματίδια και τις δυνάμεις (το καθιερωμένο πρότυπο) και μερικά από τα αναπάντητα ερωτήματα. Θα παρουσιαστούν τα εργαλεία, επιταχυντές και ανιχνευτές, που χρησιμοποιούνται και η μεθοδολογία που ακολουθείται. Τέλος θα συζητηθούν τα κοινωνικά οφέλη που αποκομίζουμε από την έρευνα σ' αυτό τον τομέα.

**Mapping  
the secrets  
of the Universe  
with the Large  
Hadron Collider**

**Ανιχνεύοντας  
τα μυστικά  
του σύμπαντος  
με τον μεγάλο  
επιταχυντή  
αδρονίων  
στο CERN**

**PROGRAMME**

**19:30-19:40 Classical Music**

Svetlana Nor (violin), J.S. Bach, Prelud in E-dur for violin solo  
Vladimir Nor (cello), J.S. Bach, Menuet in G-dur for cello solo

**19:40-20:25 Mapping the secrets of the universe with the Large Hadron Collider at CERN**  
Dr. Despina Hatzifotiadou (ALICE experiment, CERN, Switzerland and INFN Bologna, Italy)





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Enjoy you stay on Crete!