



FORTH
INSTITUTE OF ASTROPHYSICS



Astronomy Education at IA-FORTH

The Sky is NOT the limit



Panagiotis Evangelopoulos
PO & Education Officer, IA-FORTH

IA-FORTH History & Goals

Founded in 2018 after a 20+ years of successful astrophysics activities within IESL-FORTH

➤ Targeted Scientific Research

- ✓ Theoretical Astrophysics (compact objects, high-energy astrophysics, ISM physics, cosmology, astrostatics)
- ✓ Observational Astrophysics (ground based and space born)

➤ Major Research Infrastructures

- ✓ Skinakas Observatory - @1750m altitude, ~50km from Heraklion
- ✓ High Performance Computing cluster “Metropolis” of the Dept. of Physics

➤ Education and Public Outreach

- ✓ Training of students and postdocs to address key outstanding problems in astrophysics
- ✓ Organizing astronomy stargazing PO events across Crete – engaging public in science
- ✓ Directly involved in influencing astronomy & STEM curricula in K-12 levels

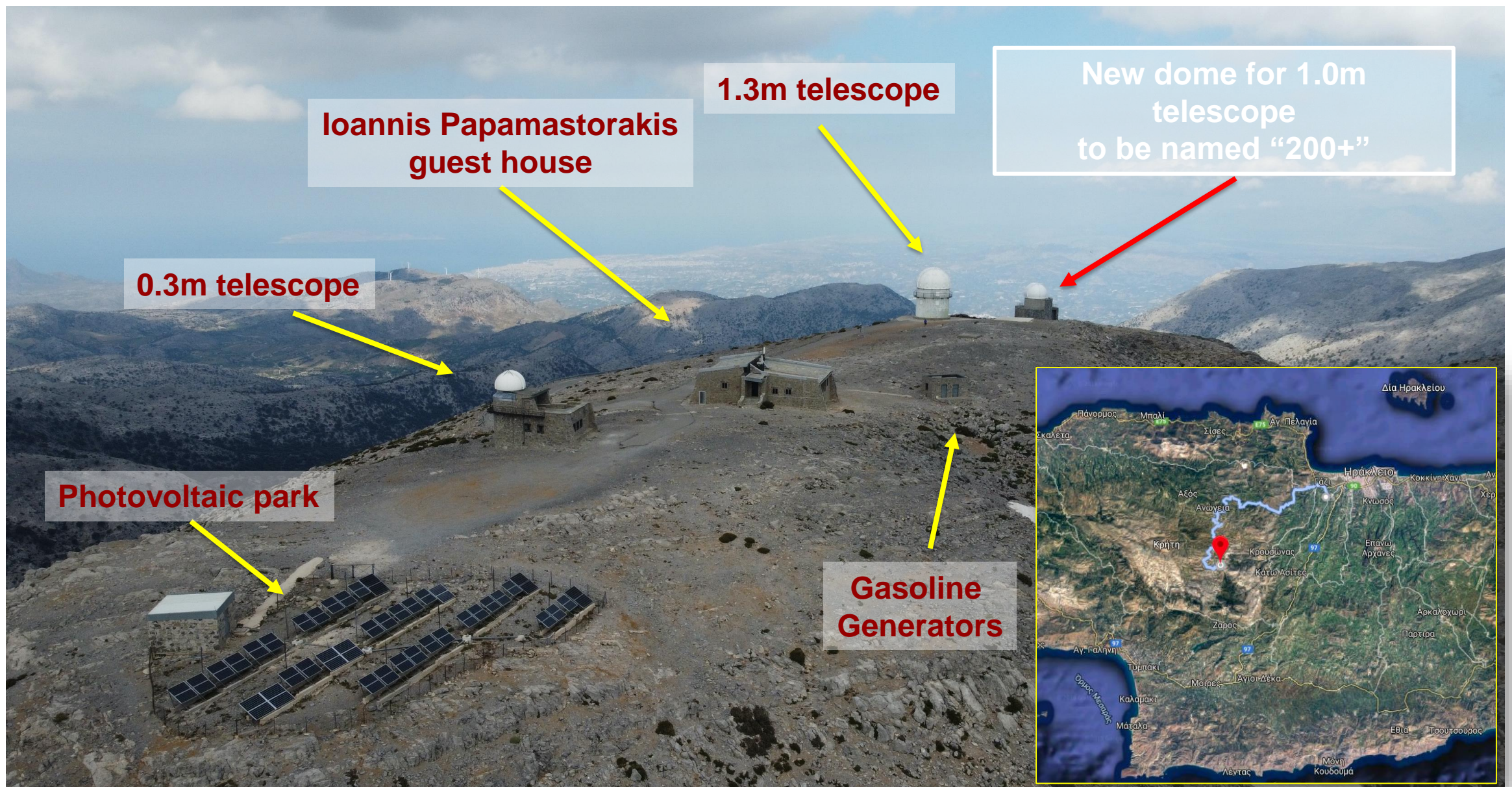
➤ Small in size - Emphasis on Excellence – “Boutique” Institute

IA-FORTH - Public Outreach & Education

The main public outreach and education related activities are:

- **Open Nights at Skinakas Observatory**
- **Organization of the Annual School of Astrophysics of Crete**
- **Support the “Eureka, Eureka!” prize for high-school teachers**
- **Support STEM education at K-12 via astronomy projects**
- **Create quality science content in the social media**
- **Contribute to astronomy publications for non-scientists**
- **Contribute to university level education & Onassis Lectures**

IA-FORTH - Open Nights at Skinakas Observatory



IA-FORTH - Open Nights at Skinakas Observatory

➤ Open Nights at Skinakas Observatory

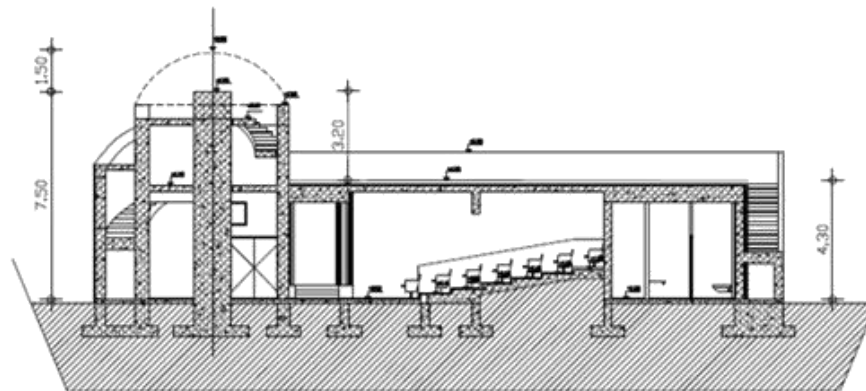
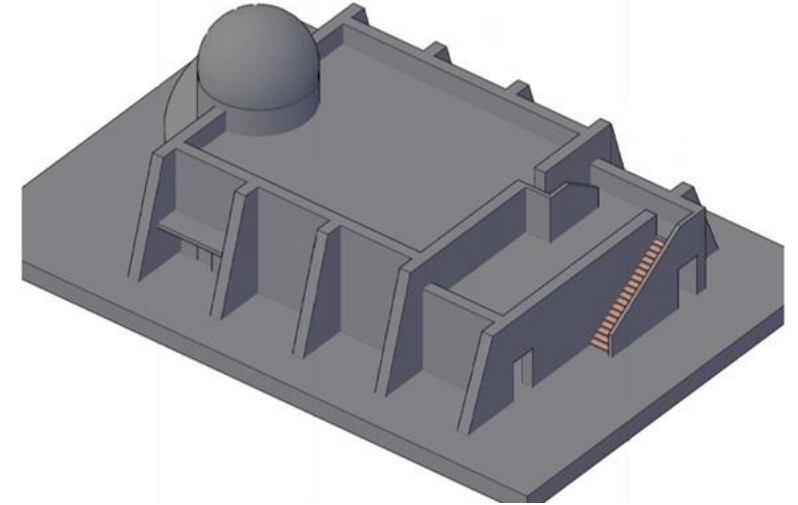
- ✓ Commenced with the construction of the 1.3m telescope in 1995
- ✓ Typically 5 to 10 nights per year (in 2019 we reached ~2000 visitors),
- ✓ Visitors experience the nature of mountainous Crete
- ✓ Observe through the eyepiece of the 1.3m telescope as well as smaller portable telescopes
- ✓ Offer guided tours of select constellations using our eyes and green lasers
- ✓ Discuss with the astronomers
- ✓ View instructional presentations
- ✓ Learn how telescopes & astronomers work



IA-FORTH - Open Nights at Skinakas Observatory

➤ Open Nights at Skinakas Observatory

- ✓ The experience will improve greatly in two years!
- ✓ Construction of new visitor center center at Skinakas, adjacent to the “Ioannis Papamastorakis” Guest house by the town of Anogia, has commenced in July 2022
- ✓ The ~1MEuro project is supported by the Committee “Greece 2021”
- ✓ It will host a 85seat multipurpose lecture hall
- ✓ Its 5.3m dome will host a fully robotic 0.6m optical telescope (currently next to the 1.3m telescope).
- ✓ It will strengthen the ties with town of Anogeia.



ΣΧΗΜΑΤΕΚΗ ΤΟΜΗ



IA-FORTH - School of Astrophysics of Crete

➤ School of Astrophysics of Crete

- ✓ Co-organized with the Dept. of Physics of Univ. of Crete & the Society of Physicists of Crete
- ✓ Started in 2021 offering high quality educational experience to students from Crete
- ✓ Addressed to students in A' and B' class of lyceum
- ✓ A total of 8 lectures via the web, covering all topics of modern astrophysics at top level
- ✓ Close interactions with students, answering all astronomy questions,
- ✓ Offer the option the participate in an remote exam
- ✓ The first 5 receive three free astronomy books from Crete University Press
- ✓ The first 3 have the unique opportunity to observe for two nights at Skinakas Observatory with the astronomers on duty.
- ✓ Great success so far. Over- subscription by a factor of two



IA-FORTH - “Eureka, Eureka!” Prize

➤ Annual “Eureka, Eureka!” Prize

- ✓ Established in 2020 in collaboration with Crete University Press & Mathesis
- ✓ Addressed to the motivated Secondary Education teachers who experiment with more creative forms of teaching and learning, either in the main body of the school program or outside school hours.
- ✓ Recognizes educational activities that are inspired by the most attractive and at the same time the most dynamic part of fundamental physics today: Astronomy.
- ✓ The first prize is 2,000 Euros to the teacher selected
- ✓ In addition 1,000 Euros is offered to the School for educational material

✓ More info:

✓ <https://www.ia.forth.gr/el/eureka-prize>



IA-FORTH - STEM Education

➤ Support STEM education at K-12 via astronomy projects

- ✓ Directly involved in creating and distributing free high quality educational material for astronomy
- ✓ Organize training sessions for educators (elementary, primary and high-school)
- ✓ Currently funded both nationally (HFRI/ΕΛΙΔΕΚ) and by the EC via ERASMUS+
 - ✓ «Discovery Space», HFRI
 - ✓ «LaSciL: Large Scientific Infrastructures enriching online and digital Learning», ERASMUS+
- ✓ Collaborate with experienced educators in high schools across Greece and in Europe
 - ✓ Some examples in Greece:
 - ✓ Ελληνογερμανική Αγωγή, Athens
 - ✓ Παγκρήτιο Εκπαιδευτήριο, Heraklion
 - ✓ Σχολείο Ευρωπαϊκής Παιδείας, Heraklion
 - ✓ Πειραματικό Σχολείο, Heraklion
- ✓ More info and educational material:
 - ✓ <https://lascil.eu>
 - ✓ <https://d-space.gr>

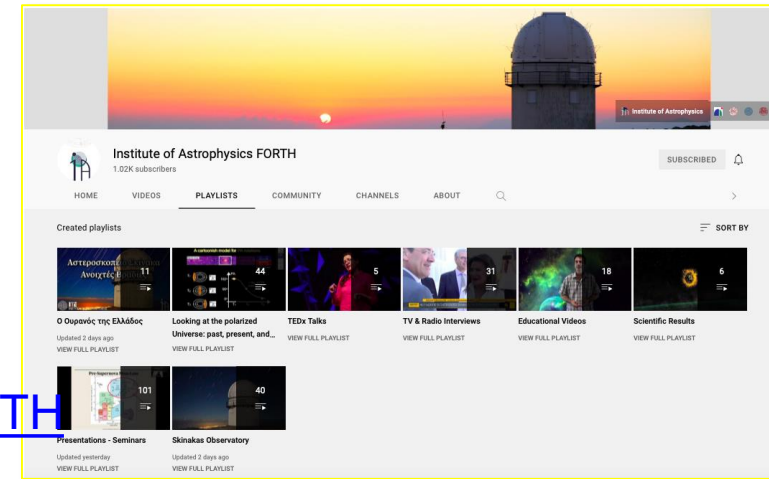


IA-FORTH - PO & Social Media

➤ Create & distribute quality science content and astronomy images in social media

✓ Active YouTube channel (~200 videos, >1000 subscribers), which contains playlists with:

- ✓ Monthly stargazing suggestions
- ✓ TEDx talks of IA-FORTH staff
- ✓ Videos of Skinakas Observatory
- ✓ Educational videos with astronomy exercises
- ✓ Nearly all seminars of IA-FORTH
- ✓ See: <https://www.youtube.com/c/InstituteofAstrophysicsFORTH>

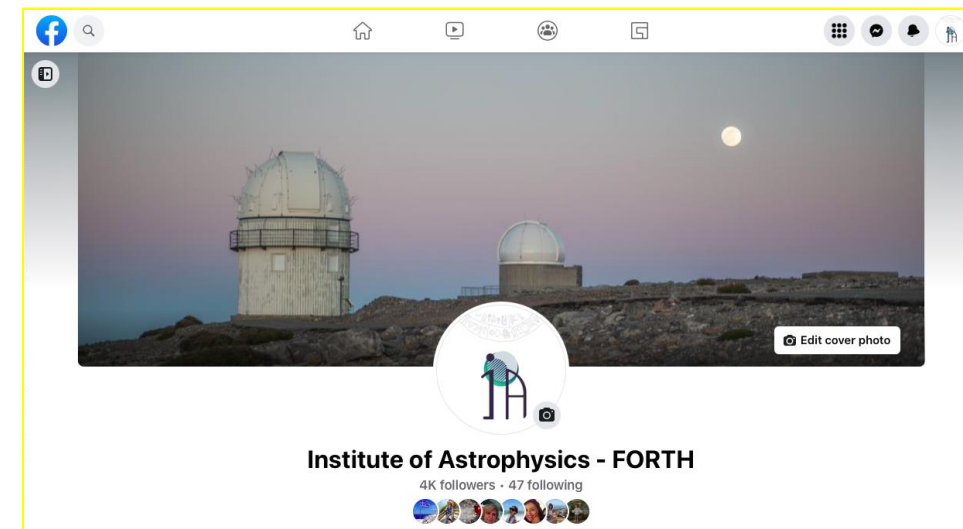


✓ Vibrant Facebook page (>4000 subscribers)

- ✓ Regular astronomy news in Greek/English
- ✓ Inform on achievements of IA scientists
- ✓ Announce PO & Educational Events broadly
- ✓ See: <https://www.facebook.com/ia.forth>

✓ IA-FORTH photo gallery

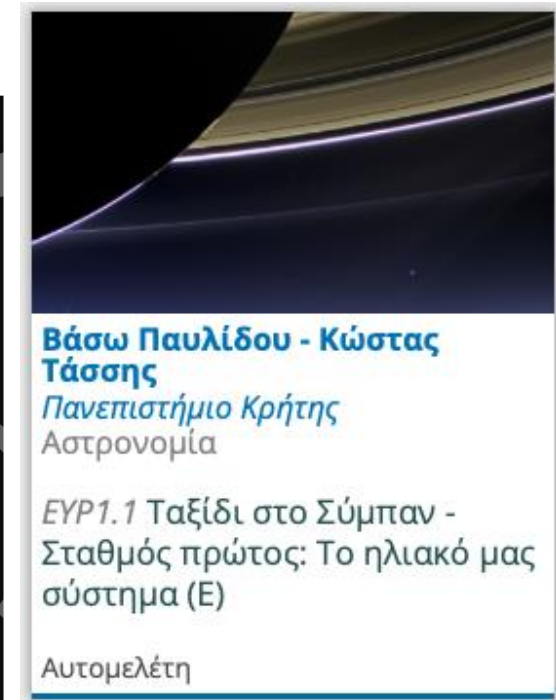
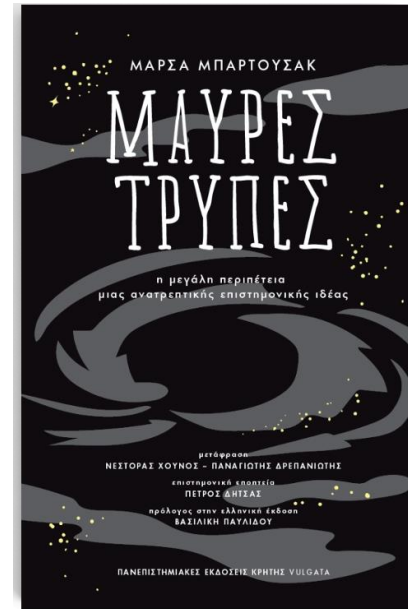
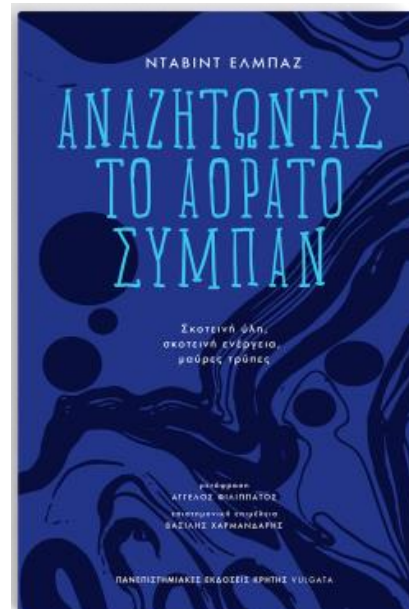
- ✓ A selection of our spectacular astronomical images
- ✓ See: <https://gallery.ia.forth.gr>



IA-FORTH - Publications

➤ Support the publication of astronomy books for the non scientists

- ✓ Under the guidance of Crete University Press, publish or supervise translations in Greek of astronomy books for non-scientists
- ✓ A local “best seller” which will appear in English at the end of 2022
- ✓ Crete virtual books using the “*Mathesis*” platform of Crete University Press



IA-FORTH - Education at University Level

➤ Teaching at University level

- ✓ All affiliated faculty of IA-FORTH teach astronomy courses at undergraduate and graduate level at the Univ. of Crete

➤ Contribute to the Onassis Lectures

- ✓ Since 2001 invite at FORTH one Nobel prize winner + group of leading scientists to teach graduate students from all over the world in Physics, Chemistry, Biology & Computer Science
- ✓ So far 21 Nobel prize winners, 1 Fields Medalist, 4 Turing Award Recipients
- ✓ The 2022 Lectures are on "Gravitational Waves"
- ✓ Scientific Director: I. Papamastorakis, Emeritus Professor

THE ONASSIS FOUNDATION SCIENCE LECTURE SERIES

The 2022 Lectures in Physics powered by ONASSIS EDUCATION

Scientific Committee

- Prof. V. Charmandaris • Prof. E. N. Economou
- Prof. J. Hoffmann • Prof. Y. Iliopoulos
- Prof. W. Ketterle • Prof. E. Moudrianakis
- Prof. D. Nanopoulos • Prof. V. Ramakrishnan
- Prof. N. Tavernarakis • Prof. D. Tsidiridis
- Prof. E. Witten • Prof. H. zur Hausen

Scientific Director of the Program
Prof. I. Papamastorakis, FORTH

Location/Address
Foundation for Research and Technology - Hellas
"The Onassis Foundation Science Lecture Series"
N. Plastira 100, Vassilika Vouton
GR-700 13 Heraklion, Crete, Greece
Tel: +30 2810 394292
Fax: +30 2810 394293
E-mail: OnassisF@admin.forth.gr

Participants
Researchers, Postdoctoral Associates, Postgraduate and advanced Undergraduate students.
On-line applications through our website:
<http://www.forth.gr/onassis/>
Deadline for Application: June 17th 2022.

Financial Aid
The Onassis Foundation will support travel and accommodation expenses for up to fifty five Greek students and up to fifteen international students, selected on the basis of their academic performance. The financial aid for the travel of non-European students cannot exceed the maximum amount of the reimbursement provided for the travel of European students. Interested students should attach to their CV a list of courses taken, their grades, and two letters of recommendation. Excellent knowledge of English is required.

Certificate
Admitted students receive a certificate after successful participation in the lectures and the submission of a summary report for each lecture presented.

Lecturers

- BARRY BARISH**
Professor, Caltech, USA
Nobel Prize (2017) in Physics
- LISA BARSOTTI**
Principal Research Scientist, MIT Kavli Institute, USA
- MARICA BRANCHESI**
Professor, Gran Sasso Scientific Institute, Italy
- ALESSANDRA BUONANNO**
Professor, Max Planck Institute for Gravitational Physics, Germany
- MATTHEW EVANS**
Professor, MIT, USA
- JAN HARMS**
Professor, Gran Sasso Scientific Institute, Italy
- ERIK KATSAVOUNIDIS**
Senior Research Scientist, MIT Kavli Institute, USA
- PATRICK SUTTON**
Professor, Cardiff University, UK
- STEFANO VITALE**
Professor, University of Trento, Italy

IA-FORTH - PO & Education – The Future

➤ Plans for the future

- ✓ Improve the organization and experience during Open Nights at Skinakas Observatory
- ✓ Organize common cultural/scientific events with town of Anogeia and city of Heraklion
- ✓ Better coordinate activities with amateur clubs of Crete and Univ. of Crete (ΣΦΑΚ, ΑΟΦΠΚ)
- ✓ Create free high quality astronomy educational material in the form of remote lectures
- ✓ Expand the Astrophysics School of Crete to a national lecture series
- ✓ Using the soon to be acquired 1.0m class “200+” telescope thanks to the donation by the Committee “Greece 2021” offer the opportunity of remote observing and training to basic astronomy skill to all high-schools in Greece

IA-FORTH: The sky is not our limit...



A bright future for Astrophysics in Greece