



REINFORCE

REsearch INfrastructures FOR Citizens in Europe

Course Programme:

“ Physics for Senior Citizen Scientists ”

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2021/2022



06
OCT
2021

Classical particle physics

Giancarlo Cella, Pisa University

- ✎ The concept of space and time, in Galileo, Descartes and Newton
- ✎ The concept of particle trajectory, mass, speed, acceleration
- ✎ Laws of Newton, the movement of the planets

08
OCT
2021

Particles & waves in the XX century

Massimiliano Razzano, Pisa University

- ✎ Einstein special relativity, $E=mc^2$
- ✎ Quanta, particle-wave duality, $E=h\nu$, Heisenberg principle, particle and antiparticles
- ✎ Cosmic ray physics
- ✎ Subnuclear forces, radioactivity, quantum field theory
- ✎ Nuclear and particle reactions, why they produce energy
- ✎ The forces and particles zoo

10
NOV
2021

Waves: concept and detection

Giancarlo Cella, Pisa University

- ✎ The concept of wave in Huygens, amplitude, frequency, interference
- ✎ Electromagnetic theory and waves, aether
- ✎ Their detection with the Michelson and Morley interferometer

03
DEC
2021

The cosmology of the visible universe

Stavros Katsanevas, EGO

- ✎ Formation and evolution of white dwarf stars, black holes and neutron stars
- ✎ Formation and evolution of galaxies, their redshift
- ✎ Formation and evolution of particles, primordial cosmology

12
JAN
2022

General relativity


Valerio Boschi, National Institute for Nuclear Physics

- ✎ New concept of spacetime, GW equations, effects, ways of detection, LIGO and Virgo, sources of noise
- ✎ Sources of Noise, analyses of waves, glitches, FFT etc
- ✎ What have we discovered up to now

09
FEB
2022

Citizen Science: from theory to practice

Francesco Di Renzo, Pisa University

-  The REINFORCE project
-  Search for glitches
-  Hands-on activity on Zooniverse

09
MAR
2022

Brainstorming and resolution of technical and theoretical problems



Gary Hemming, EGO & Emmanuel Chaniokatis, Ellinogermaniki Agogi

Brainstorming with REINFORCE scientists.

06
APR
2022

The sonification of gravitational waves

Wanda Diaz Merced, EGO

-  Introduction to sonification techniques
-  Sonification tools and goals in REINFORCE

11
MAY
2022

Art & Science

Stavros Katsanevas, EGO



-  Art & Science in REINFORCE
-  Concept, techniques and representation of the nature of space and time
-  The role of humans as observers and actors

18
MAY
2022

VISIT to EGO and the VIRGO interferometer

Virgo Senior Citizen Scientist Prize 21/22

Vincenzo Napolano, EGO & Emmanuel Chaniokatis,
Ellinogermaniki Agogi

-  Visit to the EGO site and the interferometer
-  Final evaluation and awarding of the Virgo Senior Citizen Scientist Prize to the top senior citizen scientists of the class



REINFORCE
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 **Cascina (PI)**
Biblioteca comunale
Viale Comaschi n° 67

      **16:00-17:00**



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