



REINFORCE

REsearch INfrastructures FOR Citizens in Europe

Course Programme:

“ Physics for Senior Citizen Scientists ”

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

● ● ● ● ● ● 16:00-17:00

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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 Hughsen, amplitude, frequency, interference
- Electromagnetic theory and waves, aether
- Their detection with the Michelson and Morley interferometer

03
DEC
2022

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

09
MAR
2022

Citizen Science: from theory to practice

Francesco Di Renzo, Pisa University

- The REINFORCE project
- Search for glitches: tools and methods
- Hands-on activity on Zooniverse

06
APR
2021

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

29
APR
2022

Brainstorming and resolution of technical problems

Gary Hemming, EGO

- Brainstorming with REINFORCE technical manger

06
MAY
2022

The sonification of gravitational waves

Francesco Di Renzo, Pisa University

- The sonification of gravitational waves
- 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

Gary Hemming, EGO

- Visit to the EGO site
- Visit to the VIRGO interferometer



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