esipap...

EUROPEAN SCHOOL OF INSTRUMENTATION IN PARTICLE & ASTROPARTICLE PHYSICS

SCIENCE, TECHNOLOGY & APPLICATIONS OF PARTICLE DETECTORS

NEXT SESSION

COURSE 1 : 17 JAN - 11 FEB 2022
COURSE 2 : 14 FEB - 11 MAR 2022

ON-LINE APPLICATIONS

1 SEPT - 1 NOV 2021
www.esipap.eu

CONTACT

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SCHOOL DIRECTOR

Pr. Johann Collot (UGA)

LOCATION - ON SITE COORDINATION

European Scientific Institute
Greater Geneva (Archamps, France)

HYBRIDE FORMAT (on site and on line)
Decision on September 2021

ECTS and doctoral credits awarded by participating universities

Minimum B2 English level

Limited number of participants

THE EYES AND EARS OF PARTICLE PHYSICS

Whether in orbit around the earth, journeying through outer space or on giant terrestrial high-energy accelerators, particle detectors are the eyes of scientists engaged in the exploration of the enchanted world of quantum microscopic phenomena. Their technology and specifications vary tremendously depending on the project's scientific objectives, but they all rely on a set of basic interaction principles established over the last two centuries. New technology renders modern particle detectors ever more powerful, leading to new discoveries which in turn drive further technological advances. Spin-off developments over recent years have meant that particle detectors accompany us in our daily lives in fields as diverse as medical imaging, DNA sequencing and fibre-optic communication.

PREPARING THE DESIGNERS, BUILDERS AND OPERATORS OF TOMORROW'S PARTICLE DETECTORS

ESIPAP offers Master, PhD students and young professionals two intensive 4-week courses delivered by a faculty comprising some 50 experts from academia, research facilities and industries active in the field. Course 1 (mid-January to mid-February) addresses the physics of particle detectors, whereas course 2 (mid-February to mid-March) covers advanced lectures and applications. The curriculum is overseen by an international Advisory Committee which includes **ESIPAP**'s participating universities. Both courses are validated by exams so that the latter may attribute ECTS and/or doctoral credits to their participating students.

ESIPAP proposes an innovative pedagogical approach, with a unique mix of lectures, tutorials, seminars, group workshops, practical sessions and laboratory visits, including CERN and LPSC, ILL and Institut Néel in Grenoble.

· Course 1 ·

PHYSICS OF PARTICLE AND ASTROPARTICLE DETECTORS

Week 1

EXPERIMENTAL COSMOLOGY

EXPERIMENTAL SUBATOMIC PHYSICS

EXPERIMENTAL ASTROPARTICLE PHYSICS

Week 2

INTERACTION OF PARTICLES WITH MATTER

TRACKING

RADIOPROTECTION

MACHINE LEARNING & LABS

Week 3

CALORIMETRY

MUON DETECTION

PARTICLE IDENTIFICATION & LABS

Week 4

DETECTOR SIMULATION

C++ PROGRAMMING & COMPUTING SESSIONS

· Course 2 ·

ADVANCED LECTURES & APPLICATIONS

Week 5

ADVANCED LECTURES ON DETECTORS

ELECTRONICS AND SIGNAL PROCESSING

Week 6

DATA ACQUISITION

DATA HANDLING

OFFLINE COMPUTING

Week 7

MAGNETS FOR PARTICLES DETECTORS

PROJECT MANAGEMENT

ADDITIVE PRINTING

ADVANCED COURSES & LABS

Week 8

MEDICAL APPLICATION & END OF SCHOOL PROJECT

MEDICAL APPLICATIONS : RADIOTHERAPY & MEDICAL IMAGING

"ESI is the only place in the world where a school like ESIPAP can be organised at an acceptable cost."

PROF. JOHANN COLLOT, ESIPAP DIRECTOR

"For everything you're interested in, there's an expert standing in front of you explaining it in detail."

Silke, University of Göttingen

"It was incredibly intensive and fascinating to meet so many people including so many experts."

Jennifer, University of Helsinki

"I made connections with people from all over the world."

Vlad, Polytechnic University of Bucharest

"ESIPAP has shown me the passion which goes into large international projects and how they can be brought to completion."

Daniel, University of Glasgow

PARTICIPATING UNIVERSITIES

SCIENTIFIC PARTNERS

esipap
European School of Instrumentation in Particle & Astroparticle Physics

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